FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

SACRAMENTO INTERNATIONAL AIRPORT MASTER PLAN UPDATE

Control Number: PLER2020-00037
State Clearinghouse Number: 2005082017
January 2022

COUNTY OF SACRAMENTO
PLANNING AND ENVIRONMENTAL REVIEW
827 7TH STREET, ROOM 225
SACRAMENTO, CALIFORNIA 95814

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County Executive

Ann Edwards, County Executive

Prepared By

County of Sacramento
Planning and Environmental Review

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This Supplemental Environmental Impact Report has been prepared pursuant to the California Environmental Quality Act of 1970 (Public Resources Code Division 13). A Supplemental Environmental Impact Report is an informational document which, when this Office requires its preparation shall be considered by every public agency prior to its approval or disapproval of a project. The purpose of a Supplemental Environmental Impact Report is to provide public agencies with detailed information about the effect that a proposed project is likely to have on the environment; to list ways in which any adverse effects of such a project might be minimized; and to suggest alternatives to such a project.

Prepared by the
COUNTY OF SACRAMENTO
PLANNING AND ENVIRONMENTAL REVIEW
827 7TH STREET, ROOM 225
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Planning and
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Leighann Moffitt, Director

County Executive
Ann Edwards

January 13, 2022

TO: All Interested Parties

SUBJECT: FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR SACRAMENTO INTERNATIONAL AIRPORT MASTER PLAN UPDATE (CONTROL NUMBER: PLER2020-00037)

The subject Final Supplemental Environmental Impact Report (FSEIR) is attached for your review. The FSEIR can also be reviewed at:
https://planningdocuments.saccounty.net/default.aspx?ControlNum=PLER2020-00037 .

The Sacramento County Board of Supervisors will consider the FSEIR and the proposed project in a public hearing to be held at 700 H Street, Room 1450 (Board Chambers). The hearing is scheduled for February 15, 2022.. Interested individuals may also check the materials for upcoming hearings on the Sacramento County Board of Supervisors website
http://www.bos.saccounty.net/Pages/default.aspx

For questions about the project, please contact Alison Little of this office at (916) 874-8620 or littlea@sacccounty.net.

Sincerely,

[Original Signature on File]

Joelle Inman
Environmental Coordinator

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PREFACE

The Draft Supplemental Environmental Impact Report for the Sacramento International Airport (SMF) Master Plan Update was published on May 14, 2021 for a 45-day public review period that ended on June 28, 2021. A public hearing on the Draft EIR was held by the County Planning Commission on August 2, 2021. Two written public comments were received by the Clerk of the Board prior to the County Planning Commission. After the Planning Commission meeting, one additional written comment was submitted and the Sacramento Metropolitan Air Quality Management District provided an addendum comment letter. A total of 10 written comment letters were received.

Section 15088.5 of the CEQA Guidelines describes the circumstances in which recirculation of a Draft EIR is required:

15088.5. RECIRCULATION OF AN EIR PRIOR TO CERTIFICATION

> (a) A lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification. As used in this section, the term “information” can include changes in the project or environmental setting as well as additional data or other information. New information added to an EIR is not “significant” unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project’s proponents have declined to implement. “Significant new information” requiring recirculation includes, for example, a disclosure showing that:
>
>> (1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
>>
>> (2) A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
>>
>> (3) A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project, but the project’s proponents decline to adopt it.
>>
>> (4) The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. (Mountain Lion Coalition v. Fish and Game Com. (1989) 214 Cal.App.3d 1043)

(b) Recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR.

This Final SEIR contains revisions to the text and mitigation measures and other minor revisions in response to the comments on the Draft SEIR. These revisions do not constitute new information that is "significant" as defined in CEQA Guidelines Section 15088.5 because they do not result in any new significant environmental impacts or a substantial increase in the severity of any impacts. Based on the number and scope of public comments received and the public hearing conducted at the County Planning Commission, it is clear that meaningful opportunities have been provided for the public to comment upon the substantial adverse environmental effects of the project or feasible ways to mitigate or avoid such an effect. Furthermore, the Project Proponents have not declined to implement the feasible mitigation measures included in this Final SEIR. None of the triggers requiring recirculation identified in CEQA Guidelines Section 15088.5 have been met.

One additional technical change not captured in the draft or final SEIR is that in May of 2020, in accordance with FAA requirements, Sacramento International Airport's runway designations were changed from 16L/34R and 16R/34L to 17L/35R and 17R/35L respectively. This was due to naturally occurring changes in local magnetic variation and is required for safety to allow magnetic compass headings inside aircraft to align with the runway designation when the aircraft is aligned with the runway centerline. The airport's runways as referenced in each document two are physically exactly the same dimensions and in the same locations as they have always been since originally built. The change in designation has no material effect on any aspect covered under the FSEIR; however, because of the timing of the change, the Draft SMF Airport Master Plan Update refers to the old designations, and therefore, so does this document for consistency with the Draft Master Plan Update.

EXECUTIVE SUMMARY

The subject of this Supplemental Environmental Impact Report (SEIR) is a project known as Sacramento International Airport Master Plan Update. The project site is located in the Natomas community of unincorporated Sacramento County. The Sacramento County Board of Supervisors certified the original FEIR on August 7, 2007 and approved the Sacramento International Airport Master Plan.

The project site is located approximately 10 miles north of downtown Sacramento, north of I-5 east of the Sacramento River. The project is located within Sections 13, 24, 25, 36 of Township 10N and Range 3E; Sections 18, 19, 30, 31, Township 10N and Range 4E; and Sections 6, Township 9N, Range 4E of the USGS Taylor Monument quadrangle map.

SEIR Scope and Impacts Evaluated

As an initial step in the environmental review process, the Project was compare with the prior FEIR prepared for the Airport Master Plan. Changes to the prior project along with new topical environmental analyses were considered to determine whether the Project would have the potential to result in significant impacts. During the Notice of Preparation (NOP) scoping process comments were received from the following agencies:

- California Department of Fish and Wildlife (CDFW)
- California Department of Transportation (Caltrans)
- City of Sacramento
- Native American Heritage Commission
- Regional Water Quality Control Board (RWQCB)
- Sacramento Area Sewer District (SASD)
- Sacramento Metropolitan Air Quality Management District (SMAQMD)
- Sacramento Municipal Utility District (SMUD)

This report identifies significant and unavoidable impacts related to air quality long-term emissions, **biological resources native trees,** operational greenhouse gas emissions, farmland conversion, transportation and circulation related to an increase in vehicle miles traveled.

This report identifies impacts that are less than significant with mitigation for impacts associated with air quality short-term emissions, biological resources, cultural resources, land use compatibility, noise, public services, transportation and circulation related to safety, and tribal resources. These impacts are identified as significant or potentially significant, which could be reduced to a less than significant level through inclusion of recommended mitigation measures.

Impacts associated with aesthetics, geology and soils, hazards and hazardous materials, hydrology, mineral resources, population and housing, and public services and utilities **are considered less than significant**.

The following environmental impact and mitigation summary table (*Table ES-1: Executive Summary of Impacts and Mitigation on page 3*) briefly describes the project impacts evaluated in the Draft SEIR and the mitigation measures recommended to eliminate or reduce the impacts. The residual impact after mitigation is also identified. Detailed discussions of each of the identified impacts and mitigation measures, including pertinent supporting data, can be found in the specific topic sections in the remainder of this report.

Table ES-1: Executive Summary of Impacts and Mitigation

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
AIR QUALITY			
<u>Construction Emissions– Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment</u> The project will involve the construction of buildings, cargo aprons, parking structures, and a new concourse which will release air pollutants (NO_x, ROG and Particulate Matter). Project specific modeling was completed to determine if the project exceeds Sacramento Metropolitan Air Quality Management District thresholds of significance. Project construction will continue through the life of the Master Plan (2040). The number of projects occurring at once is unknown at this time and projects may overlap. This would result in construction emissions exceeding thresholds established for NO_x and particulate matter. Adherence to recommended mitigation measures reduces construction emissions impacts to less than significant.	S	AQ-1 (Prior EIR Mitigation Measure AQ-1 and 2 Revised) All future construction projects which exceed the SMAQMD construction ozone precursor screening thresholds in effect at the time of project submittal shall include an ozone precursor analysis. If the analysis results indicate that the project will generate ozone precursors that exceed the current Sacramento Metropolitan Air Quality Management District thresholds, this mitigation shall apply. This mitigation may be modified if guidance from the Sacramento Metropolitan Air Quality Management District changes in the future. a. The project applicant, or its designee, shall provide a plan for approval by the Sac Metro Air District that demonstrates the heavy-duty off-road vehicles (50 horsepower or more) to be used 8 hours or more during the construction project will achieve a project wide fleet-average 10% NOx reduction compared to the most recent California Air Resources Board (CARB) fleet average. The plan shall have two components: an initial report submitted before construction and a final report submitted at the completion. (Acceptable options for reducing emissions may include use of cleaner engines, low-emission	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.) b. Submit the initial report at least four (4) business days prior to construction activity using the Sac Metro Air District's Construction Mitigation Tool (http://www.airquality.org/businesses/ceqa-land-use-planning/mitigation). c. Provide project information and construction company information. d. Include the equipment type, horsepower rating, engine model year, projected hours of use, and the CARB equipment identification number for each piece of equipment in the plan. Incorporate all owned, leased and subcontracted equipment to be used. e. Submit the final report at the end of the job, phase, or calendar year, as pre-arranged with Sac Metro Air District staff and documented in the approval letter, to demonstrate continued project compliance. The SMAQMD may conduct periodic site inspections to determine compliance. Nothing in this mitigation shall supersede other air	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		district, state or federal rules or regulations. This mitigation will sunset on January 1, 2028, when full implementation of the CARB InUse Off-Road Regulation is expected. AQ-2 (Prior EIR Mitigation Measure AQ-4 Revised)To mitigate the additional construction emissions that cannot be offset through implementation of Mitigation Measure AQ-1, above, the following shall apply: Prior to construction activities, SCDA or the project proponent will submit proof that the off-site air quality mitigation fee has been paid to SMAQMD, and that the construction air quality mitigation plan has been approved by SMAQMD and the Environmental Coordinator. The fee will be calculated based on the most current SMAQMD recommended methodology and fee rate available at the time of ground disturbance. AQ-3 (Prior EIR Mitigation Measure AQ-5) The following mitigation measures will be incorporated into the project to minimize the generation of PM_{10} dust during dry construction conditions: a. Enclose, cover, or water twice daily all soil piles. b. Water exposed soil with adequate frequency for continued moist soil.	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		c. Water all haul roads twice daily. d. Cover loads of all haul/dump truck securely.	
Operational Emissions– Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment The project consists of the construction of several new structures including a large cargo facility, new concourse, consolidated rental car facility, and commercial uses. All of these facilities will introduce long-term emissions. Modeling indicates that the proposed operational activities will exceed thresholds established for NO_x and ROG. Mitigation is recommend to reduce these emissions, but not to a less than significant level.	S	AQ-4 All projects which include loading docks, including the proposed cargo facility, shall ensure, through sale or leasing agreements, that the haul fleet consist of trucks that as a minimum meet the emissions standards of a 2010 vehicle model, and as trucks are replaced they are replaced with the newest available model. **Annual reporting shall be provided to the Sacramento County Department of Airports. To ensure compliance of hired third-party fleets serving the facility, it is recommended that a Truck and Bus CARB Certificate is verified for each fleet.** In addition, the project shall include electrical hookups at all loading bays, and electric vehicle charging stations and/or infrastructure (e.g., conduit and panel space) to support future installation of truck charging stations for future zero-emission heavy-duty vehicles. ~~AQ-5~~ **An Air Quality Mitigation Plan (AQMP) obtaining 15 percent or more reduction in mobile source ozone precursors shall be prepared by the Sacramento County Department of Airports. The AQMP shall be reviewed by the SMAQMD and approved by**	SU

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<u>the Environmental Coordinator prior to issuance of occupancy permits of the first project or element under the Master Plan Update.</u>~~For the proposed cargo facility and other projects which exceed the SMAQMD operational screening levels, Prior to issuance of occupancy permits, project operator(s) shall prepare and submit a Transportation Demand Management (TDM) program detailing strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips by walking, bicycle, carpool, vanpool, and transit. The TDM program shall include, but is not limited to, the following:~~ ~~a. Provide transportation information center and on-site TDM coordinator to educate employers, employees, and visitors of surrounding transportation options;~~ ~~b. Promote bicycling and walking through design features, such as showers for employees, self-service bicycle repair area, etc. around the project site;~~ ~~c. Promote and support carpool/vanpool/rideshare use through parking incentives and administrative support, such as ride-matching service; and~~ ~~d. Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated~~	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		~~parking spaces for carpool/vanpool users.~~ **AQ-6** ~~The proposed cargo facility and other projects which exceed the SMAQMD operational screening levels, shall establish a new, or join and maintain membership in an existing Transportation Management Association.~~ **<u>A Transportation Demand Management Program (TDM) shall be prepared by Sacramento County Department of Airports. The TDM shall be reviewed by the SMAQMD and approved by the Environmental Coordinator prior to issuance of occupancy permits of the first project or element under the Master Plan Update. The TDM program must detail strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips by walking (internal to SMF), bicycling, carpool, and transit. The TDM program shall include, but is not limited to, the following:</u>** **<u>a. Provide transportation information center and on-site TDM coordinator/program manager to educate employers, employees, and visitors of surrounding transportation options and ensure implementation;</u>** **<u>b. Ensure that there is a permanent funding mechanism to support the program (CSD-1 or similar).</u>** **<u>c. Promote bicycling and/or walking through design features. Examples may include showers for employees, self-service bicycle</u>**	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		repair area, etc. around the project site; **d. Promote and support carpool use through parking incentives and administrative support. Examples may include ride-matching service or other methods.** **e. Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated parking spaces for carpool users.** **f. TDM coordinator/program manager is responsible for preparing an annual report to the Environmental Coordinator.** AQ-7 Future development projects under the Airport Master Plan Update shall use low VOC content paints that exceed the regulatory VOC limits put forth by SMAQMD's Rule 442. Low VOC paints shall be no more than 10 grams per liter (g/L) of VOC. Alternatively, ~~the~~ pre-painted material that do not require the use of architectural coating may be utilized. **The contractor shall submit to the Sacramento County Department of Airports a schedule of all paint to be used to demonstrate compliance with this measure. Sacramento County Department of Airports shall communicate annually with facilities management and tenants regarding this requirement beyond the initial application of coatings.**	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
Mobile Source CO Emissions The proposed project was evaluated to determine if there would be a significant increase in CO emissions. While the project will decrease the level of service for some area roadways, none of the roadways intersections exceed 31,600 vehicles per hour, nor are they limited by vertical or horizontal mixing, and the project fleet average is typical of the Sacramento region. Impacts associated with mobile source CO emissions are less than significant.	LS	None recommended.	LS
Expose Sensitive Receptors to Substantial Pollutant Concentrations **The proposed Master Plan Update projects will emit TACs including total organic gases (TOG) associated with building construction and operation, and $PM_{2.5}$ associated with construction equipment and diesel engine trucks. The exposure of sensitive receptors (e.g., existing and future offsite residents) to TACs from project-generated construction and operational sources are discussed below. The following discussion focuses on Diesel Particulate Matter, the TAC with the greatest health effects according to the SMAQMD Guide.** ~~The only toxic air contaminant generated by the project is diesel particulate matter (DPM).~~ Given the projects distance from surrounding receptors, prevalent wind direction, and	LS	None Recommended	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
topography DPM emissions will not exceed standards at surrounding receptors. Potential health effects were screened using the latest guidance. Based on the results of the tool, the percent of background health indices would be less than one percent. Therefore, the health effects associated with the proposed cargo facility and Master Plan Update would be negligible.			
<u>Odors</u> Diesel exhaust produced during construction-related activities and associated with truck trips is the primary source of odors associated with the proposed project. Construction emissions are temporary and generally disperse rapidly. Truck trips are along an unpopulated portion of Elverta Road. Further, the nearest sensitive receptor (i.e., school, day-care, nursing home, hospital) is three miles from the project site.	LS	None Recommended.	LS
BIOLOGICAL RESOURCES			
<u>Wetlands and Surface Waters</u> The project site contains 174 acres of wetlands, of which 9.39 acres may be directly impacted. The project applicant will need to obtain any and all permits from the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish a Wildlife, and the Central Valley Regional Water Quality Control Board prior to any new ground disturbance. Application of the	S	BR-1 In order to reduce impacts to wetland habitat the applicant shall comply with one or a combination of the following prior to every project which involves wetlands or waters of the U.S. or State: a. Where a Section 404 Permit has been issued by the U.S. Army Corps of Engineers, or an application has been made to obtain a Section 404 Permit, the Mitigation and Management Plan required	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
recommended mitigation measure will reduce impacts to less than significant.		by that permit or proposed to satisfy the requirements of the USACE for granting a permit may be submitted for purposes of achieving a no net-loss of wetlands. The required Plan shall be submitted to the Sacramento County Environmental Coordinator, U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service for approval prior to its implementation. b. If regulatory permitting processes result in less than a 1:1 compensation ratio for loss of wetlands, the project applicant shall demonstrate that the wetlands which went unmitigated/uncompensated as a result of permitting have been mitigated through other means. Acceptable methods include payment into a mitigation bank or protection of off-site wetlands through the establishment of a permanent conservation easement, subject to the approval of the Environmental Coordinator.	
<u>Swainson's Hawk Nesting Habitat</u> There are recorded Swainson's Hawk nesting sites within Airport property. The project site provides nesting habitat for the hawk and expanded use of the site would result in a potentially significant impact to nesting Swainson's hawk. Preconstruction surveys will be required to determine if there are nesting	PS	BR-2 Initiation of ground disturbance (clearing and grubbing, grading, or construction) for any proposed construction project shall be conducted between September 15 and March 1. If new disturbance must be conducted during the nesting season, March 1 to September 15, a focused survey for Swainson's hawk nests on the site and within ½ mile of the site shall be conducted by a qualified biologist in accordance with the	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
Swainson's hawks on or within ½ mile of the project site.		Swainson's Hawk Survey Protocol outlined in the Swainson's Hawk Technical Advisory Committee 2000 paper. Note that multiple surveys may be required depending on the timing of the surveys. If active nests are found, a qualified biologist shall be retained to prepare a site-specific take avoidance plan that proposes measures to comply with the California Endangered Species Act and the Fish and Game Code, and these measures shall be implemented prior to the start of any ground-disturbing activities. Measures may include but are not limited to nest-specific no disturbance buffers, biological monitoring, rescheduling project activities around sensitive periods for the species (e.g. nest establishment), or implementation of construction best practice such as staging equipment out of the species' line of sight from the nest tree. In the event take of Swainson's hawk cannot be avoided, the project proponent may seek related take authorization as provided by Fish and Game Code. If no active nests are found during the focused survey, no further mitigation will be required.	
<u>Swainson's Hawk Foraging Habitat</u> The project site north of Elverta Road provides foraging habitat for the hawk and development of the site would result in a potentially significant loss of that habitat. In total, the project will require 135 acres of mitigation to compensate for the loss of Swainson's hawk foraging habitat.	S	BR-3 Prior to any development north of Elverta Road as shown in PAL 3, such as clearing or grubbing, the issuance of any permits for grading, building, or other site improvements, implement one of the following options to mitigate for the loss of up to 135 acres of Swainson's hawk foraging habitat on the project site: a. The project proponent shall utilize one or	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		more of the mitigation options (land dedication and/or fee payment) established in Sacramento County's Swainson's Hawk Impact Mitigation Program (Chapter 16.130 of the Sacramento County Code). b. The project proponent shall, to the satisfaction of the California Department of Fish and Wildlife, prepare and implement a Swainson's hawk mitigation plan that will include preservation of Swainson's hawk foraging habitat. c. Should the County Board of Supervisors adopt a Swainson's hawk mitigation policy/program (which may include a mitigation fee payable prior to issuance of building permits) prior to the implementation of one of the measures above, the project proponent may be subject to that program instead.	
<u>Nesting Raptors</u> Since the project area may provide suitable tree nesting habitat (specifically north of Elverta Road), construction activities may impact nesting raptors if they occur within 500 feet of suitable nesting trees. Pre-construction surveys for nesting raptors are required prior to construction or land clearing activities that occur during nesting season (generally March through mid-September), for all mature trees within 500 feet of	PS	BR-4 If construction activity (which includes clearing, grubbing, or grading) is to commence within 500 feet of suitable nesting habitat between February 1 and September 15, a survey for raptor nests shall be conducted by a qualified biologist. The survey shall cover all potential tree,-ground, or manmade (e.g. utility poles) suitable nesting habitat on-site and off-site up to a distance of 500 feet from the project boundary. The survey shall occur within 15 days of the date that project activities will encroach within 500 feet of suitable	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
project construction activities. For this project, construction activities associated with building construction may take place over multiple years and nesting surveys will need to be completed at construction outset.		habitat. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity. If no active nests are found during the survey, no further mitigation will be required. If any active nests are found, the Environmental Coordinator and a site-specific take avoidance plan that purposes measures to comply with the Fish and Game Code shall be prepared in consultation with a qualified biologist. The avoidance/protective measures shall be implemented prior to the commencement of construction within 500 feet of an identified nest. Measures may include but are not limited to nest-specific no disturbance buffers, biological monitoring, rescheduling project activities around sensitive periods for the species (e.g. nest establishment), or implementation of construction best practice such as staging equipment out of the species' line of sight from the nest tree. If a lapse in project-related work of 15 days or longer occurs, the qualified biologist shall perform a new focused survey, and if nests are found, perform the tasks described in this measure.	
<u>Burrowing Owl</u> Burrowing owls have been known to use areas within the Airport Operation Area for breeding, wintering, foraging, and/or migration stopovers. There are potential burrowing sites within Airport	PS	BR-5 Prior to ground disturbance (which includes clearing, grubbing, or grading) within 500 feet of suitable burrow habitat, a survey for burrowing owl shall be conducted by a qualified biologist. The survey shall occur within 30 days of the date that construction will encroach within 500 feet of	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
property. In order to reduce potential impacts to owl nests which may be undiscovered, the applicant shall have a qualified biologist perform a focused survey, prior to the construction of improvements or buildings, for burrowing owls.		suitable habitat. Surveys shall be conducted in accordance with the following: 1. A survey for occupied burrows and owls should be conducted by walking through suitable habitat over the area to be disturbed and in areas within 150 meters (~500 feet) of the project impact zone. 2. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (~100 feet), and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To efficiently survey projects larger than 100 acres, it is recommended that two or more surveyors conduct concurrent surveys. Surveyors should maintain a minimum distance of 50 meters (~160 feet) from any owls or occupied burrows. It is important to minimize disturbance near occupied burrows during all seasons. 3. If no occupied burrows or burrowing owls are found in the survey area, a letter report documenting survey methods and findings shall be submitted to the Environmental Coordinator and no further mitigation is necessary. 4. If occupied burrows or burrowing owls are	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		found, then a complete burrowing owl survey is required. This consists of a minimum of four site visits conducted on four separate days, which must also be consistent with the Survey Method, Weather Conditions, and Time of Day sections of Appendix D of the California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012). Submit a survey report to the Environmental Coordinator which is consistent with the Survey Report section of Appendix D of the California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012). 5. If occupied burrows or burrowing owls are found the applicant shall contact the Environmental Coordinator and confer with California Fish and Wildlife prior to construction, and will be required to submit a Burrowing Owl Mitigation Plan (subject to the approval of the Environmental Coordinator and in consultation with California Fish and Wildlife). This plan must document all proposed measures, including avoidance, minimization, exclusion, relocation, or other measures, and include a plan to monitor mitigation success. The California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012) shall be followed in the	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		development of the mitigation plan.	
<u>White-tailed Kite</u> The project study area includes habitat types that are suitable for foraging and nesting white-tailed kites. These habitat types consist of agricultural fields and freshwater marshland. Nesting habitat includes riparian trees found north of Elverta Road and oak woodland found along the Sacramento River. Construction of the proposed commercial development will result in the loss of foraging habitat for white-tailed kite which will be a significant impact. The white-tailed kite foraging habitat requirements overlap with Swainson's hawk foraging habitat requirements; therefore, implementation of mitigation measures for the loss of Swainson's hawk foraging habitat will reduce the impact to white-tailed kite foraging habitat to less than significant. Consequently, no specific mitigation will be required for the white-tailed kite.	PS	See BR-3.	LS
<u>Loggerhead Shrike</u> Open wooded areas on the north and west side of the airport and agricultural fields provide suitable foraging habitat for the loggerhead shrike and the species has been observed on airport property. Construction of the commercial development will result in the loss of foraging habitat for loggerhead	PS	See BR-3.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
shrike which will be a significant impact. The loggerhead shrike foraging habitat requirements overlap with Swainson's hawk foraging habitat requirements; therefore, implementation of mitigation measures for the loss of Swainson's hawk foraging habitat will reduce the impact to loggerhead shrike foraging habitat to less than significant. Consequently, no specific mitigation will be required for the loggerhead shrike.			
<u>Tricolored Blackbird</u> The project study area includes freshwater marsh areas, ditches, and grassy areas that are suitable for foraging tricolored blackbirds. Freshwater marsh north of Elverta Road offers suitable nesting habitat, and ditches and canals that have not been recently cleared of cattails and tules also provide potential nesting habitat for this species. The large swaths of riparian and marsh habitats north of Elverta Road will not be directly impacted by the proposed commercial development identified in PAL 3; however, construction noise and removal of patches of tulles and blackberries growing in the drainage ditches may result in the disturbance to, or loss of suitable nesting for tricolored blackbirds. This is a potentially significant impact. Mitigation is recommended to reduce potential impacts to nesting tricolored blackbirds.	PS	BR-6 If construction activity (which includes clearing, grubbing, or grading) is to commence within 300 feet of suitable tricolored blackbird nesting habitat between March 1 and July 31, a survey for nesting tricolored blackbirds shall be conducted by a qualified biologist. The survey shall cover all potential nesting habitat on-site and off-site up to a distance of 300 feet from the project boundary. The survey shall occur within 30 days of the date that construction will encroach within 300 feet of suitable habitat. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity. If no tricolored blackbird were found during the pre-construction survey, no further mitigation would be required. If an active tricolored blackbird colony is found on-site or within 300 feet of the project site the project proponent shall do the following: 1. Consult with the California Department of Fish and Wildlife to determine if project activity will	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		impact the tricolored blackbird colony(s). Provide the Environmental Coordinator with written evidence of the consultation or a contact name and number from the California Department of Fish and Wildlife. Implement all protective measures recommended by the California Department of Fish and Wildlife. 2. With the California Department of Fish and Wildlife permission, the applicant may avoid impacts to tricolored blackbird by establishing a 300-foot temporary setback, with fencing that prevents any project activity within 300 feet of the colony. A qualified biologist shall verify that setbacks and fencing are adequate and will determine when the colonies are no longer dependent on the nesting habitat (i.e. nestling have fledged and are no longer using habitat). The breeding season typically ends in July. 3. If tricolored blackbird habitat is permanently destroyed follow the California Department of Fish and Wildlife procedure to mitigate for habitat loss, and submit documentation of the mitigation to the Environmental Coordinator.	
<u>Giant Garter Snake</u> The project will impact GGS aquatic habitat. Impacts may be temporary where the proposed project is within 200 feet of suitable or marginal aquatic habitat, or they may be permanent associated with filling or culverting the aquatic	S	BR-7 Prior to construction activities within 200 feet of the appropriate habitat on the project site, the applicant shall consult with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife regarding the giant garter snake and shall obtain any required permits. Unless otherwise indicated by permits or other	LS

Impacts	**Level of Significance Before Mitigation**	**Mitigation Measure**	**Level of Significance After Mitigation**
feature. PAL 2 and 3 may impact up to two acres of marginal habitat. Compensatory mitigation for giant garter snake habitat impacts will take place as PALs of the Master Plan project become ready for implementation, beginning with PAL 1. Consultation with the USFWS and CDFW will be required for any ground disturbance of suitable or marginal aquatic habitat and all uplands within 200 feet of these features. At a minimum, avoidance and minimization measures pursuant to Programmatic Consultation Guidelines, must be implemented; however, additional avoidance and minimization measures may be determined through the consultation process. The loss of giant garter snake habitat resulting from project construction will be a-significant impact. Implementation of recommended mitigation measure BR-7 will ensure impacts are less than significant.		documentation provided by the U.S. Fish and Wildlife Service, provide mitigation and protective measures consistent with those published in the Programmatic Consultation for the species ("Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California". 1-1-F-97-149. November 13, 1997.). Confine any ground disturbing activity (i.e. clearing, grubbing, grading, and excavation) in giant garter snake habitat to May 1st to October 1st (which is the snake's active period). At a minimum the following avoidance and minimization measures shall be implemented; • Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the USFWS's Sacramento office to determine if additional measures are necessary to minimize and avoid take. • Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as Environmentally Sensitive Areas. This area	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		should be avoided by all construction personnel. • Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s). • 24-hours prior to construction activities, the project area should be surveyed for giant garter snakes. Survey of the project area should be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the USFWS. • Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat. • After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
Western Pond Turtle The marsh habitat north of Elverta Road is directly connected to the Sacramento River a does provide suitable habitat for western pond turtle. The Species was not observed during species surveys conducted in 2020. However, the eventual development of commercial uses north of Elverta identified in PAL 3 may encroach into the 1,650 foot recommended buffer. Mitigation is recommended to ensure no turtles are impacted.	PS	BR-8 To avoid impacts to western pond turtles the following shall apply: 1. Twenty four hours prior to the commencement of ground-disturbing activity (i.e. clearing, grubbing, or grading) suitable habitat within the project area shall be surveyed for western pond turtle by a qualified biologist. The survey shall include aquatic habitat and 1,650 feet of adjacent uplands surrounding aquatic habitat within the project area. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity. 2. Construction personnel shall receive worker environmental awareness training. This training instructs workers how to recognize western pond turtles and their habitat. 3. If a western pond turtle is encountered during active construction, all construction shall cease until the animal has moved out of the construction area on its own or relocated by a qualified biologist. If the animal is injured or trapped, a qualified biologist shall move the animal out of the construction area and into a suitable habitat area. California Fish and Wildlife and the Environmental Coordinator shall be notified within 24-hours that a turtle was encountered.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<u>Have a Substantial Effect on Any Riparian Habitat or Other Sensitive Natural Community</u> The area north of Elverta Road contains annual grasslands, agricultural lands, riparian woodlands, marsh and pasture. Improvements along Elverta Road and potential commercial development will remove some agricultural land and isolated oak trees. The larger swaths of riparian, marsh or valley oak woodland habitat would be avoided. The project would not substantially reduce the natural communities in and surrounding the project area. Native tree mitigation will further reduce this impact.	LS	See BR-10.	LS
<u>Interfere with the Movement of any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors</u> The project is within the Natomas Basin which contains several wildlife corridors for a variety of species. The proposed commercial development north of Elverta Road has the potential to affect non-special-status native nesting birds protected by the Migratory Bird Treaty Act and/or California Fish and Game Code. If the project causes a bird to abandon an active nest may cause harm to egg(s) or chick(s) and is therefore considered "take." To avoid take of nesting migratory birds, mitigation has been included to require that activities either occur outside of the nesting season, or to require that nests be buffered from	LS	BR-9 To Avoid impacts to nesting migratory birds the following shall apply: 1. If construction activity (which includes clearing, grubbing, or grading) is to commence within 50 feet of nesting habitat between February 1 and August 31, a survey for active migratory bird nests shall be conducted no more than 14 day prior to construction by a qualified biologist. 2. Trees slated for removal shall be removed during the period of September through January, in order to avoid the nesting season. Any trees that are to be removed during the nesting season, which is February through August, shall be surveyed by a qualified biologist and will only be removed if no nesting migratory birds are found.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
construction activities until the nest or nesting tree becomes inactive.		3. If active nest(s) are found in the survey area, a non-disturbance buffer, the size of which has been determined by a qualified biologist, shall be established and maintained around the nest to prevent nest failure. All construction activities shall be avoided within this buffer area until a qualified biologist determines that nestlings have fledged, or until September 1.	
<u>Conflict with Local Policies or Ordinances Protecting Biological Resources</u> Sacramento County has identified the value of its native and landmark trees and has adopted measures for their preservation. The Tree Ordinance (Chapter 19.04 and 19.12 of the County Code) provides protections for landmark trees and heritage trees. The project site contains native oak trees along Elverta Road and north of Elverta Road. A tree inventory has not been completed for these areas, but will be required prior to project development and plan approval. Mitigation consistent with adopted policies and ordinances protecting native tree resources is recommended.	PS	BR-10 Prior to project approval of Elverta Road Improvements associated with the cargo facility (PAL 1) and the commercial development north of Elverta Road (PAL 3), a tree inventory shall be completed which includes all native trees over six (6) inches in diameter at breast height must be inventoried including species, size, dripline radius, health condition within the proposed areas of impact. The removal of native trees shall be compensated for by planting in-kind native trees equivalent to the dbh inches lost, based on the ratios listed below, at locations that are authorized by the Environmental Coordinator. On-site preservation of native trees that are less than 6 inches (<6 inches) dbh, may also be used to meet this compensation requirement. Native trees include: valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), blue oak (*Quercus douglasii*), or oracle oak (*Quercus morehus*), California sycamore (*Platanus racemosa*), California black walnut (*Juglans californica*, which	PS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		is also a List 1B plant), Oregon ash (*Fraxinus latifolia*), western redbud (*Cercis occidentalis),* gray pine (*Pinus sabiniana*), California white alder (*Alnus rhombifolia*), boxelder (*Acer negundo*), California buckeye (*Aesculus californica*), narrowleaf willow (*Salix exigua*), Gooding's willow (*Salix gooddingii*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), shining willow (*Salix lucida*), Pacific willow (*Salix lasiandra*), and dusky willow (*Salix melanopsis*). Replacement tree planting shall be completed prior to approval of grading or improvement plans, whichever comes first. Equivalent compensation based on the following ratio is required: • one preserved native tree < 6 inches dbh on-site = 1 inch dbh • one D-pot seedling (40 cubic inches or larger) = 1 inch dbh • one 15-gallon tree = 1 inch dbh • one 24-inch box tree = 2 inches dbh • one 36-inch box tree = 3 inches dbh Prior to the approval of Improvement Plans or Building Permits, whichever occurs first, a Replacement Tree Planting Plan shall be prepared by a certified arborist or licensed landscape architect and shall be submitted to the	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Environmental Coordinator for approval. The Replacement Tree Planting Plan(s) shall include the following minimum elements: 1. Species, size and locations of all replacement plantings and < 6-inch dbh trees to be preserved 2. Method of irrigation 3. If planting in soils with a hardpan/duripan or claypan layer, include the Sacramento County Standard Tree Planting Detail L-1, including the 10-foot deep boring hole to provide for adequate drainage 4. Planting, irrigation, and maintenance schedules; 5. Identification of the maintenance entity and a written agreement with that entity to provide care and irrigation of the trees for a 3-year establishment period, and to replace any of the replacement trees which do not survive during that period. 6. Designation of 20-foot root zone radius and landscaping to occur within the radius of trees < 6 inches dbh to be preserved on-site. No replacement tree shall be planted within 15 feet of the driplines of existing native trees or landmark size trees that are retained on-site, or within 15 feet of a building foundation. The minimum spacing for replacement native trees shall be 20 feet on-center. Examples of	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		acceptable planting locations are publicly owned lands, common areas, and landscaped frontages (with adequate spacing). Generally unacceptable locations are utility easements (PUE, sewer, storm drains), under overhead utility lines, private yards of single family lots (including front yards), and roadway medians. Native trees <6 inches dbh to be retained on-site shall have at least a 20-foot radius suitable root zone. The suitable root zone shall not have impermeable surfaces, turf/lawn, dense plantings, soil compaction, drainage conditions that create ponding (in the case of oak trees), utility easements, or other overstory tree(s) within 20 feet of the tree to be preserved. Trees to be retained shall be determined to be healthy and structurally sound for future growth, by an ISA Certified Arborist subject to Environmental Coordinator approval. If tree replacement plantings are demonstrated to the satisfaction of the Environmental Coordinator to be infeasible for any or all trees removed, then compensation shall be through payment into the County Tree Preservation Fund. Payment shall be made at a rate of $325.00 per dbh inch removed but not otherwise compensated, or at the prevailing rate at the time payment into the fund is made. BR-11 For the purpose of this mitigation measure, a native tree is defined as a those listed in Mitigation	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Measure BR-10 having a diameter at breast height (dbh) of at least 6 inches, or if it has multiple trunks of less than 6 inches each, a combined dbh of at least 10 inches. With the exception of the trees removed and compensated for through Mitigation Measure BR-10, above, all native trees on the project site, all portions of adjacent off-site native trees which have driplines that extend onto the project site, and all off-site native trees which may be impacted by utility installation and/or improvements associated with this project, shall be preserved and protected as follows: 1. A circle with a radius measurement from the trunk of the tree to the tip of its longest limb shall constitute the dripline protection area of the tree. Limbs must not be cut back in order to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area of the tree. Removing limbs which make up the dripline does not change the protected area. 2. Chain link fencing or a similar protective barrier shall be installed one foot outside the driplines of the native trees prior to initiating project construction, in order to avoid damage to the trees and their root system. 3. No signs, ropes, cables (except cables which may be installed by a certified arborist to provide limb support) or any other items shall	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		be attached to the native trees. 4. No vehicles, construction equipment, mobile home/office, supplies, materials or facilities shall be driven, parked, stockpiled or located within the driplines of the native trees. 5. Any soil disturbance (scraping, grading, trenching, and excavation) is to be avoided within the driplines of the native trees. Where this is necessary, an ISA Certified Arborist will provide specifications for this work, including methods for root pruning, backfill specifications and irrigation management guidelines. 6. All underground utilities and drain or irrigation lines shall be routed outside the driplines of native trees. Trenching within protected tree driplines is not permitted. If utility or irrigation lines must encroach upon the dripline, they should be tunneled or bored under the tree under the supervision of an ISA Certified Arborist. 7. If temporary haul or access roads must pass within the driplines of oak trees, a roadbed of six inches of mulch or gravel shall be created to protect the root zone. The roadbed shall be installed from outside of the dripline and while the soil is in a dry condition, if possible. The roadbed material shall be replenished as necessary to maintain a six-inch depth. 8. Drainage patterns on the site shall not be modified so that water collects or stands within, or is diverted across, the dripline of oak	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		trees. 9. No sprinkler or irrigation system shall be installed in such a manner that it sprays water within the driplines of the oak trees. 10. Tree pruning that may be required for clearance during construction must be performed by an ISA Certified Arborist or Tree Worker and in accordance with the American National Standards Institute (ANSI) A300 pruning standards and the International Society of Arboriculture (ISA) “Tree Pruning Guidelines”. 11. Landscaping beneath the oak trees may include non-plant materials such as boulders, decorative rock, wood chips, organic mulch, non-compacted decomposed granite, etc. Landscape materials shall be kept two (2) feet away from the base of the trunk. The only plant species which shall be planted within the driplines of the oak trees are those which are tolerant of the natural semi-arid environs of the trees. Limited drip irrigation approximately twice per summer is recommended for the understory plants. 12. Any fence/wall that will encroach into the dripline protection area of any protected tree shall be constructed using grade beam wall panels and posts or piers set no closer than 10 feet on center. Posts or piers shall be spaced in such a manner as to maximize the separation between the tree trunks and the	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		posts or piers in order to reduce impacts to the trees. 13. For a project constructing during the months of June, July, August, and September, deep water trees by using a soaker hose (or a garden hose set to a trickle) that slowly applies water to the soil until water has penetrated at least one foot in depth. Sprinklers may be used to water deeply by watering until water begins to run off, then waiting at least an hour or two to resume watering (provided that the sprinkler is not wetting the tree's trunk. Deep water every 2 weeks and suspend watering 2 weeks between rain events of 1inch or more.	
<u>Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other Approved Local, Regional, or State Habitat Conservation Plan</u> The project area is located within the boundary of the Natomas Basin and adjacent to the Metro Air Park Habitat Conservation Plans, but the County is not a participating partner. The project will not impede the ability of the HCP's to be implemented.	LS	None Recommended.	LS
CLIMATE CHANGE			
<u>Generate Greenhouse Gas Emissions that may Impact the Environment</u> Implementation of the project would contribute to	S	CC-1 Prior to approval of future development projects under the SMF Master Plan Update, the Airport shall demonstrate compliance with SMAQMD Tier 1 BMPs (required for all	SU

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
increases of GHG emissions that are associated with global climate change, primarily attributed to mobile (vehicle emissions) sources and utility usage (building operation). The majority of the GHG emissions are associated with employee mobile emissions. Passenger emissions are expected to decrease regionally as passengers are recaptured with the addition of service. The proposed cargo facility will be operational before the regional GHG emission reduction is realized; therefore, those GHG emissions are considered significant in the short-term. Overall, the Master Plan Update in its entirety will result in 5,827 MT CO_2e/year above the baseline condition. This exceeds the SMAQMD screening threshold of 1,100 MT CO_2e/year threshold. Mitigation measures are recommended to reduce GHG **construction and** operational emission, but not to a level less than significant.		projects) and Tier 2 BMPs (Mitigation Measures AQ-6 through AQ-8). Upon adoption of the Sacramento County Communitywide Climate Action Plan (CAP) and CAP Checklist, future SMF Master Plan Development projects shall demonstrate consistency with and adopt applicable CAP Checklist measures. CC-2 **All future development projects under the SMF Master Plan Update should incorporate, to the extent feasible, the following SMAQMD Guidance for Construction GHG Emissions Reductions (Best Management Practices):** a. **Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3 minutes (5 minute limit is required by the State airborne toxics control measure).** b. **Maintain construction equipment in proper working condition according to the manufacturer's specifications.** c. **Use the proper size of equipment for the job.** d. **Use equipment with new technologies (repowered engines, electric drive trains).** e. **Perform on-site material hauling with trucks equipped with on-road**	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		engines (if determined to be less emissive than the off-road engines). f. **Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power.** g. **Use ARB approved low carbon fuel for construction equipment. (*NOx emissions from the use of low carbon fuels must be determined and any increase mitigated*)**	
Conflict with Plans, Policies, or Regulations Adopted to Reduce Greenhouse Gas Emissions The proposed Master Plan Update is estimated to result in a net increase of approximately 5,827 $MTCO_2e$ per year. This exceeds established thresholds and could impede the ability of SMAQMD to meet the goals and policies of the State to meet 2030 emission reductions. The proposed Master Plan Update demonstrates consistency with State goals and would not conflict with any applicable plan, policy, or regulation adopted to reduce GHG emissions, including Title 24, AB 32, and SB32. Since the project does exceed local plans adopted to reduce GHG and despite implementation of recommended mitigation	S	See CC-1.	SU

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
measures, GHG emission impacts remain significant and unavoidable.			
CULTURAL RESOURCES			
<u>Historical Resources</u> A cultural resources survey was conducted as part of the prior FEIR. A supplemental cultural resources survey was conducted the portion of the Airport Operation Area that was not previously surveyed. The original survey indicated that the airport buildings constructed in the 1960s were not yet eligible for historic review and by 2016, most of the original airport buildings have been demolished. The only other historic resources is the RD1000 historic district, a system of roadways, drainages and canals. The project will not impact historic-period structures or historic districts, but as with any project that involves the disturbance of soil, there is a potential of inadvertent discovery of subsurface historic deposits. Potentially significant impacts can be reduced with implementation of recommended mitigation.	LS	None Recommended.	LS
<u>Archeological or Prehistoric Resources</u> The cultural resource inventories prepared for the majority of the project site did not identify known prehistoric resources. There are known prehistoric sites along the Sacramento River. Even though much of Airport land has been	PS	CR-1 Cultural Resources Unanticipated Discoveries In the event that human remains are discovered in any location other than a dedicated cemetery, work shall be halted and the County Coroner contacted. For all other unexpected cultural resources discovered during project construction, work shall be halted until a qualified archaeologist	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
disturbed in the past, this does not preclude the possibility of buried prehistoric archaeological materials or previously undiscovered surface resources within the project area and therefore is potentially significant. Recommended mitigation measure CR-1 reduce impacts to less than significant.		may evaluate the resource encountered. 1. **Unanticipated human remains**. Pursuant to Sections 5097.97 and 5097.98 of the State Public Resources Code, and Section 7050.5 of the State Health and Safety Code, if a human bone or bone of unknown origin is found during construction, all work is to stop and the County Coroner and the Office of Planning and Environmental Review shall be immediately notified. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission within 24 hours, and the Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent from the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposition of, with appropriate dignity, the human remains and any associated grave goods. 2. **Unanticipated cultural resources**. In the event of an inadvertent discovery of cultural resources (excluding human remains) during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained at the	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Applicant's expense to evaluate the significance of the find. If it is determined due to the types of deposits discovered that a Native American monitor is required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites as established by the Native American Heritage Commission shall be followed, and the monitor shall be retained at the Applicant's expense. a. Work cannot continue within the 100-foot radius of the discovery site until the archaeologist and/or tribal monitor conducts sufficient research and data collection to make a determination that the resource is either 1) not cultural in origin; or 2) not potentially eligible for listing on the National Register of Historic Places or California Register of Historical Resources. b. If a potentially-eligible resource is encountered, then the archaeologist and/or tribal monitor, Planning and Environmental Review staff, and project proponent shall arrange for either 1) total avoidance of the resource, if possible; or 2) test excavations or total data recovery as mitigation. The determination shall be formally documented in writing and submitted to the County Environmental	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Coordinator as verification that the provisions of CEQA for managing unanticipated discoveries have been met. 3. **Tribal cultural resources worker awareness.** The appended Tribal Cultural Resources (TCRs) Awareness Brochure, provides a definition and examples of TCRs that may be encountered during construction. The brochure was developed to assist construction teams with the identification and protection of TCRs. The brochure shall be shared with construction teams prior to ground disturbance. CR-2 Tribal Monitoring Prior to initiation of ground disturbance, the Sacramento County Department of Airports, or contractor, shall contact the United Auburn Indian Community and the Wilton Rancheria to determine if a Tribal Monitor is required at least two weeks prior to ground disturbance. Provide a copy of Tribal correspondence to the Environmental Coordinator. If a Tribal Monitor is required the following measures are necessary: a. A compensated (paid) Tribal Monitor form a traditionally and culturally affiliated Native American Tribe shall be retained to monitor specified ground disturbing project related activities.	

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		b. The duration of the monitoring and construction schedule shall be determined at this time. c. The Tribal Monitor will identify areas requiring monitoring in the project area during vegetation grubbing, stripping, grading or other ground-disturbing activities. All field monitoring activities will be logged by the Tribal Monitor. d. The Tribal Monitor shall wear the appropriate safety equipment and shall have the necessary background training in construction safety protocols. e. Tribal Monitors or Tribal Representatives have the authority to request that work be temporarily stopped, diverted, or slowed within 100 feet of the direct impact area if sites or objects of significance are identified. Only a Tribal Monitor or Representative from a culturally affiliated tribe can recommend appropriate treatment and final disposition of Tribal Cultural Resources.	
<u>Human Remains</u> There are no known human remain on the project site. However, the project will involve ground disturbance and there is always the potential to encounter unknown burials. If human remains are	PS	See CR-1.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
encountered, recommended mitigation measures CR-1 will reduce impacts to less than significant.			
HYDROLOGY			
<u>Substantially Alter Drainage Patterns in a Manner Which Would Impede or Redirect Flood Flows or, Substantially Increase the Rate or Volume of Runoff that Would Result in Flooding</u> Approximately 150 additional acres of pervious area will be converted to impervious surfaces. Additional impervious surfaces would result in an increase of stormwater runoff rates and volumes. On-site stormwater drainage systems will be modified to accommodate the additional impervious areas; however, overall drainage patterns will not be significantly changed. Compliance with existing regulations will ensure on-site drainage is adequate and impacts to off-site drainage facilities are less than significant.	LS	None Recommended.	LS
<u>Violate any Stormwater Quality Standards or Waste Discharge Requirements</u> Construction- and operational-related activities may release pollutants to surface waters. All projects are required to comply with the County NPDES permit which involves implementation of Best Management Practices consistent with the Sacramento Region Stormwater Quality Design Manual. Compliance with existing requirements will ensure impacts are less than significant.	LS	None Recommended.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<u>Increase Potential Release of Pollutants Due to Flood Hazard, Tsunamis, or Seiches or Develop within and Area Subject to 200-year Urban Levels of Flood Protection</u> The project site is located in two ULOP areas – one levee-protected and one non-levee protected. Several levee improvement projects are underway or completed in the Sacramento region including: the Natomas Levee Improvement Project, American River Common Features Natomas Basin Project, and the Folsom Dam Raise Project, which will provide flood protection equal or greater than the ULOP in urban or urbanizing areas by 2025. Impacts associated with urban levels of flood protection are less than significant.	LS	None Recommended.	LS
LAND USE			
<u>Conflict with Land Use Plans, Policies and Regulations Including the General Plan and Zoning Code</u> The project is consistent with the County General Plan and Zoning Code. New development within and adjacent to SMF are subject to the policies in the Airport Land Use Compatibility Plan for noise, safety and air space protection. The proposed changes to the SMF Master Plan will not impact surrounding communities.	LS	None recommended.	LS
<u>Conversion of Farmland to Non-Agricultural Uses</u>	S	LU-1. Prior to conversion of approximately 100 acres of Farmland of Local Importance north of Elverta	SU

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
The proposed commercial development north of Elverta Road is considered Farmland of Local Importance according to the latest Department of Conservation Farmland Map. A total of 135 acres will be developed with urban uses. Pursuant to County Policy AG-5 loss of farmland over 50 acres requires in-kind compensation. Even though the project proponent is required to compensate for the loss of farmland, the impact remains significant.		Road, an equal amount of land must be set aside with permanent farmland conservation easement.	
<u>Conflict with Existing Zoning for Agricultural Uses or Williamson Act Contract</u> The SCDA owns approximately 6,000 acres in and around SMF. None of the parcels are under a Williamson Act Contract. The conversion of the land to urban uses will not conflict with surrounding agricultural uses as most of the land is owned by the County and managed to reduce wildlife attractants. Impacts associated with potential conflicts with existing agricultural uses or Williamson Act contracts are less than significant.	LS	None Recommended.	LS
NOISE			
<u>Generate Substantial Temporary or Permanent Increase in Ambient Noise Levels in Excess of Standards in the General Plan or Noise Ordinance</u> Permanent increases to ambient noise associated with the construction of the cargo facility, new commercial uses, roadway improvements and realignments, and runway extension, in and	LS	None Recommended.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
surrounding SMF are expected. Since the nearest sensitive receptors are located over 0.5 miles to the west and south along the Garden Highway and two miles to the southeast in the Natomas community, the proposed project will not increase the ambient noise and impacts.			
<u>Generation of Excessive Groundborne Vibration or Noise Levels</u> The proposed project involves the construction of new buildings and infrastructure. Methods of construction are not known at this time in the planning phase, but construction methods involving pile driving or directional tunneling may generate some level of groundborne vibration or noise. There are no sensitive receptors within 0.5 miles of proposed construction areas and groundborne vibration or noise would dissipate before reaching those receptors.	LS	None Recommended.	LS
<u>Expose People Residing or Working in the Project Area to Excessive Noise Levels</u> The project serves the needs of the Airport. Many of the proposed airport facilities are located adjacent to the existing terminals, parking lots/structures, or airport support facilities. The proposed cargo facility adjacent to Runway 16R, and the identified commercial land use areas, would place people working within 60-75 dB noise contours depending on the specific location within the airport. Even though specific development and uses are not known for any of the identified commercial land use areas, application of	LS	None Recommended.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
standard building construction techniques should achieve General Plan and ALUCP policies for interior noise levels (45dB).			
PUBLIC SERVICES/UTILITIES			
<u>Result in Inefficient, Wasteful, and Unnecessary Consumption of Energy</u> The proposed project will result in construction of new buildings, which will increase consumption of energy (electric and natural gas). Expansion of existing facilities will be required to meet these needs. Additionally, all new construction must comply with Tier 1 Best Management Practices – no natural gas, which will further reduce future natural gas consumption. Coordination with utility providers will ensure siting and construction comply with Public Utilities Commission clearance requirements. No significant impacts to energy consumption have been identified.	LS	None recommended.	LS
<u>Require the Construction or Expansion of Water Facilities or Result in a Service Demand that Cannot be Met</u> Potable water is supplied to SMF via a water supply line, booster pump station and two storage tanks. The tanks have a storage capacity of 2.8 million gallons. The water supply system is designed to meet the airport's projected 2038 maximum day demand of 3,708 gallons per minute. The propose project will increase waste water, but project demand will not exceed the	LS	None Recommended.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
existing water supply system. The proposed project will not have an impact on water supply facilities.			
<u>Require the Construction or Expansion of Wastewater Facilities or Result in a Service Demand that Cannot be Met</u> The sewer infrastructure of SMF property is private and there is an agreement between the Sacramento Area Sewer District and SCDA to discharge up to 1.4 million gallons per day. The propose project will increase waste water, but project demand will not exceed the existing discharge agreement. The proposed project will not have an impact on regional wastewater treatment facilities.		None Recommended.	LS
<u>Result in the Need for Additional Landfill Capacity for Solid Waste Disposal</u> The proposed project will generate construction debris and add passengers over the life of the project. The additional solid waste associated with construction and operations will not significantly impact the capacity of any local disposal facility.	LS	None Recommended.	LS
<u>Result in Substantial Adverse Physical Impacts Associated with the Provisions of Emergency Services</u> The only fire station in the project area is the ARFF facility at SMF. A community fire station located near the airport entrance is planned for PAL 1 to provide fire and paramedic services to recent and ongoing commercial, industrial, and	LS	None Recommended.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
residential development near SMF. Construction of a new community fire station together with the ARFF facility at SMF will ensure adequate fire protection and emergency response to the airport and existing and planned commercial, industrial, and residential development in SMF's vicinity.			
Result in Substantial Adverse Physical Impacts Associated with the Provisions of Law Enforcement Services Law enforcement demand will increase in proportion to passenger activity and increases in commercial and industrial uses at SMF with the proposed project. The SCDA will coordinate with the Sheriff's Department to provide sufficient space for law enforcement activities.	LS	None Recommended.	LS
TRANSPORTATION AND CIRCULATION			
Increase Vehicle Miles Traveled The average VMT per employee for the SACOG Region is 12.58 vehicle miles, and the average VMT per employee for SMF and the cargo facility is 20.52 and 22.59 vehicle miles, respectively. Since the project would increase vehicle miles over the existing SACOG regional average the impact is considered significant. Recommended mitigation will reduce employee VMT, but not to a level of less than significant.	S	TC-1 The following measures shall be implemented by the Cargo Facility proponent to reduce employee VMT: Prior to issuance of occupancy permits, project operator(s) shall **participate in the Airport-wide** ~~prepare and submit a~~ Transportation Demand Management (TDM) program **(as outlined in mitigation measure AQ-6) which** detail~~ings~~**s** strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips by walking, bicycle, carpool, and transit. ~~The TDM program shall include, but is not limited to, the following:~~	SU

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		~~e. Provide transportation information center and on-site TDM coordinator to educate employers, employees, and visitors of surrounding transportation options;~~ ~~f. Promote bicycling and walking through design features, such as showers for employees, self-service bicycle repair area, etc. around the project site;~~ ~~g. Promote and support carpool/vanpool/rideshare use through parking incentives and administrative support, such as ride-matching service; and~~ ~~h. Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated parking spaces for carpool/vanpool users.~~ ~~TC-2 Prior to issuance of Occupancy permits, the Cargo Facility proponent shall establish a new, or join and maintain membership in an existing Transportation Management Association.~~	
<u>Conflict with Program or Policy Addressing Circulation System Including Transit, Roadway, Bicycle and Pedestrian Facilities</u> The project is consistent the County Transportation Plan, Bicycle Master Plan and Pedestrian Master Plan. The project includes local and on-site transit service and continues to show	LS	None recommended.	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
proposed extension of those services. Compliance with applicable access and circulation requirements of the County Improvements Standards and the Uniform Fire Code.			
Substantially Increase Roadway Hazards The project will increase traffic on local roadways and freeways. Roadway safety hazards were identified along Elverta Road from Earhart Road to State Route 99. This is a substandard rural roadway where recommended mitigation to widen travel lanes and construct paved should will reduce this safety hazard. Other roadway safety hazards were identified for the southbound I-5/Airport Boulevard off-ramp. In the cumulative conditions, traffic may result in queuing extending onto the freeway. Mitigation involving monitoring and installation of a signalized intersection or roundabout, will reduce this impact to less than significant.	S	**TC-2** Elverta Road Improvements (Earhart Road to Power Line Road) Install roadway improvements along this segment of Elverta Road to County standards of 12-foot vehicle lanes with 6-foot paved shoulders**, or to the satisfaction of the Sacramento County Department of Transportation**. **TC-3** Elverta Road Improvements (Power Line Road to State Route 99) If required by the County of Sacramento Department of Transportation, install roadway improvements along this segment of Elverta Road to County standards of 12-foot vehicle lanes with 6-foot paved shoulders**, or to the satisfaction of the Sacramento County Department of Transportation**. OR Pay fair share, as determined by the County of Sacramento Department of Transportation, for this segment of Elverta Road widening. **TC-4** The southbound Airport Boulevard off-ramp shall be monitored as each PAL is completed (PAL 1- ~~2024~~**7.3 million enplaned passengers**, PAL 2- ~~2028~~**8.2**	LS

Impacts	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		million enplaned passengers, PAL 3-~~2032~~**9.2 million enplaned passengers**). If the queue length begins to impede the mainline, the Department of Airports shall install intersection improvements in consultation with Sacramento County Department of Transportation and Caltrans. Improvements could consist of signalization or roundabout.	
Result in Inadequate Emergency Services The project includes provisions for emergency services and no impacts have been identified to existing or proposed emergency services.	LS	None recommended.	LS
TRIBAL CULTURAL RESOURCES			
Pursuant to the AB52 consultation process, response from Tribes did not identify a known sacred site or Tribal Cultural Resource; however, as with historic and pre-historic cultural resources, there is always the possibility of uncovering buried resources when ground disturbance is proposed. The United Auburn Indian Community and Wilton Rancheria requested Tribal awareness training and Tribal monitors during initial ground disturbance. Recommended mitigation measure CR-2 would further reduce this impact.	PS	See CR-1 and CR-2.	LS

Mitigation Monitoring and Reporting Program

It shall be the responsibility of the project applicant/owner to provide written notification to the Environmental Coordinator, in a timely manner, of the completion of each Mitigation Measure. The Environmental Coordinator will verify that the project is in compliance with the adopted Mitigation Monitoring and Reporting Program (MMRP). It shall be the responsibility of the project applicant to reimburse the Office of Planning and Environmental Review for all expenses incurred in the implementation of the MMRP, including any necessary enforcement actions. Any non-compliance will be reported to the project applicant/owner, and it shall be the project applicant's/owner's responsibility to rectify the situation by bringing the project into compliance and re-notifying the Environmental Coordinator. Any indication that the project is proceeding without good-faith compliance could result in the imposition of administrative, civil and/or criminal penalties upon the project applicant/owner in accordance with Chapter 20.02 of the Sacramento County Code.

Terminology Used in this EIR

This Draft SEIR uses the following terminology to describe environmental effects of the project.

Significance Criteria. A set of criteria used by the lead agency to determine at what level, or "threshold," an impact would be considered significant. Significance criteria used in this EIR include those that are set forth in the CEQA Guidelines, or can be discerned from the CEQA Guidelines; criteria based on factual or scientific information; criteria based on regulatory standards of local, state, and federal agencies; and criteria based on goals and policies identified in the Sacramento County General Plan.

Less than Significant Impact. A project impact is considered less than significant when it does not reach the standard of significance and would therefore cause no substantial change in the environment. No mitigation is required for less than significant impacts.

Potentially Significant Impact. A potentially significant impact is a substantial, or potentially substantial, adverse change in the environment. Physical conditions which exist within the area will be directly or indirectly affected by the proposed project. Impacts may also be short-term or long-term. A project impact is considered significant if it reaches the threshold of significance identified in the EIR. Mitigation measures may reduce a potentially significant impact to less than significant.

Significant Unavoidable Impact. A project impact is considered significant and unavoidable if it is significant and cannot be avoided or mitigated to a less-than-significant level once the project is implemented.

Cumulative Significant Impact. A cumulative impact can result when a change in the environment results from the incremental impact of a project when added to other related past, present or reasonably foreseeable future projects. Significant cumulative impacts may result from individually minor but collectively significant projects.

Mitigation. Mitigation measures are revisions to the project that would minimize, avoid, or reduce a significant effect on the environment. CEQA Guidelines §15370 identifies 5 types of mitigation:

a) Avoiding the impact altogether by not taking a certain action or parts of an action.

b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.

d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

e) Compensating for the impact by replacing or providing substitute resources or environments.

1 PROJECT DESCRIPTION

INTRODUCTION

The proposed project is the Sacramento International Airport (SMF) Master Plan Update. The Master Plan Update revises the existing program for modifications of existing facilities and development of new facilities at SMF through the year 2038. The Master Plan addresses all aspects of the airport including the airfield, terminals and related passenger services, cargo, general aviation (GA), airport support, airport access and commercial development. The Master Plan Update is included as Appendix PD-1 and is available online at:

https://planningdocuments.saccounty.net/ViewProjectDetails.aspx?ControlNum=PLER2020-00037.

PROJECT BACKGROUND

The Sacramento County Department of Airports (SCDA) previously adopted a Master Plan in 2007 for the SMF (County Control Number 2004-0018). The SMF Master Plan was prepared in order to plan for the future growth of the airport through 2020. The EIR analyzed environmental impacts associated with Phase 1 (near-term 2007-2012) and Phase 2 (near-term 2013-2020) projects (reference Plate PD-2 for adopted Master Plan projects and phasing). Phase 3 projects, those beyond 2020, were identified; however, they were not developed at the level required for decision-making, and the FEIR did not contain project specific analysis for Phase 3 projects.

Under the California Environmental Quality Act (CEQA), a supplemental EIR (SEIR) is required when one or more of the following occurs:

- substantial changes are proposed in a project, which will require revisions to the previous EIR;
- substantial changes in circumstances under which the project is undertaken, which will require revisions to the previous EIR;
- the discovery of new information of substantial importance occurs after an EIR has been certified; and,

When "only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation" (State CEQA Guidelines §§15162, 15163[a][2]). Because the updated SMF Master Plan contains modified elements that were not considered in the previous analysis, the County determined that an SEIR should be prepared to revise the analysis of environmental impacts presented in the previous EIR.

In 2007, the original forecast used to determine possible airport needs assumed a growth rate of approximately 3.5 percent every year over the life of the Master Plan. However, during the planning horizon of the 2007 Master Plan, an economic recession hit, and the volume of air travel decreased. As a result, some of the expansion projects included in Phases 1 and 2 of the 2007 Master Plan were not completed However, the most significant project of the Master Plan, Terminal/Concourse B, was completed.

Since 2014, air travel and cargo transportation has increased steadily, prompting SCDA to review the status of the Master Plan and re-evaluate proposed projects identified in the Master Plan to determine the continued need for, and appropriate phasing of, projects included in the 2007 Master Plan that have not yet been completed[1]. To ensure SMF continues serving the air transportation and economic development needs of the Sacramento Region, a Master Plan Update has been commissioned to provide a strategic vision for the growth in operation of SMF over the next 20 years and guidance for land use and development decisions on and near the SMF.

The Master Plan Update addresses these changes to ensure the region's aviation needs continue to be met in a feasible and fiscally responsible manner. The Master Plan Update also ensures ongoing SMF development maintains the safe and efficient movement of passengers and products, while being compatible with the surrounding community and environment. In order to identify updates, an aircraft operations forecast was prepared using 2018 as the base year and annual forecasts were prepared for four future **Planning Activity Levels (PALs)(estimated** demand years – 2023, 2028, 2033, and 2038**)**. ~~The Master Plan Update also includes, Planning Activity Levels (PALs)~~ **These PALs** ~~used to~~ identify when improvement**s** should be made to the airport **(PAL 1- 7.3M enplaned passengers, PAL 2- 8.2M enplaned passengers, PAL 3- 9.2M enplaned passengers, PAL 4 – 10.2 enplaned passengers)**. These indicators allow for flexibility for improving the airport in the event of unexpected changes in passenger numbers throughput at the airport. In the event there are large changes in the passenger numbers, projects may change from the currently predicted demand year, or PAL, to another. PALs are used to evaluate improvement needs associated with certain activity levels. Many of the updates shift proposed airport projects that have not been completed from current planning phases to future planning phases or PALs.

According to the Master Plan Update, the 2007 Master Plan forecast estimated passenger enplanements for the year 2020 would not be reached until PAL 2 (8.2 million passengers; estimated 2028). Total aircraft operations (takeoffs or landings) estimated from the 2007 Master Plan for 2020 will not be reached within the 20-year planning horizon of the Master Plan Update. ~~A comparison of the 2007 Master Plan forecast (2020) with the Master Plan Update forecast (2038) indicates that total passenger enplanements for 2020 will not be met until PAL 2 (2028), and total~~

[1] The Master Plan Update has been prepared in accordance with Federal Aviation Administration Advisory Circular 150/5070-6B.

~~aircraft operations (flights) identified for 2020 will not be met in the life of the Master Plan Update.~~ Passenger enplanements can increase without an equivalent increase in aircraft operations, because the size and capacity of aircraft continue to increase, i.e., there are more passengers per plane.

PROJECT LOCATION

The Sacramento International Airport (SMF) is located approximately 10 miles northwest of downtown Sacramento. SMF is generally bounded by Power Line Road to the east, Garden Highway to the west, Interstate-5(I-5)/Sacramento River to the west and south, and West Elverta Road to the north (reference Plate PD-1). The project site is located within the Taylor Monument U.S. Geological Service quadrangle: Townships 9 and 10 N, Range 3 and 4 East, Sections 13, 18, 19, 24, 25, 30, 31, 36, and 6.

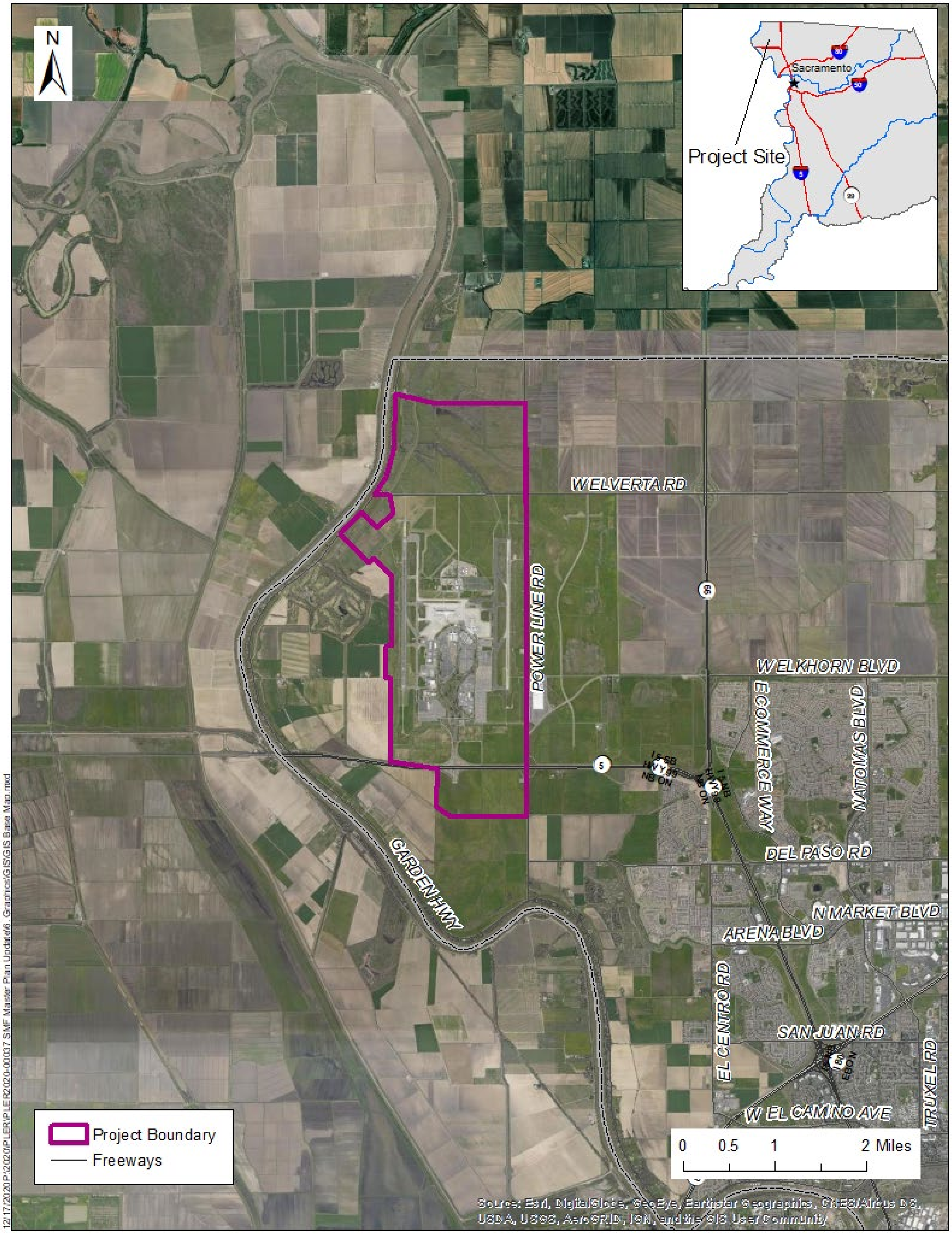
Project APNs: Various

PROJECT PROPONENTS

Owner/Applicant: Sacramento County Department of Airports (SCDA)

6900 Airport Boulevard, Sacramento, CA 95837

Plate PD-1: Project Location with 2018 Aerial Photo



ENVIRONMENTAL SETTING

Sacramento International Airport is in the 55,000-acre Natomas Basin. Due to its proximity to the Sacramento and American Rivers and the relatively low elevation of the land, this basin has historically been prone to flooding. Reclamation projects over the years have transformed Natomas into a highly productive agricultural area, mostly in rice.

The fenced and developed portion of the airport covers approximately 2,800 acres. This area contains two 8,600-foot-long parallel runways (150-foot-wide) with full-length parallel taxiways and one crossfield taxiway connecting the two runways and the passenger terminal aprons. Two terminal buildings (Terminals A and B) provide a total of 31 gates. The runways and taxiways are designed to accommodate scheduled airline and large cargo aircraft such as the Airbus A330-200 and McDonnell Douglas MD-11F, but under emergency circumstances can handle aircraft as large as the Boeing 747-400. A general aviation (GA) ramp, managed by a Fixed Base Operator provides access to the airport for non-commercial GA operations with space for approximately 50 very small aircraft or a few large aircraft. The Fixed Base Operator also manages a large corporate hangar. Other GA facilities include a Specialized Aviation Service Operator providing maintenance to GA aircraft, and three corporate hangars, which are rented. Three cargo buildings provide a total of approximately 81,500 square feet of space for integrated cargo carriers and the belly cargo of commercial passenger aircraft operations. SMF provides parking for over 15,000 cars. The airport also has rental car facilities, airline ground support facilities, shuttle bus service areas and a service station.

The remaining 3,200 acres of County property outside the Air Operations Area (AOA) and terminal complex area is kept in annual grasslands to reduce the potential for conflicts between aircraft and wildlife, or is under cultivation for rice, corn, safflower, and other crops. Land bordering the County property is used primarily for agriculture.

Single-family residences are located to the west and south of the airport along Elkhorn Boulevard, Garden Highway, and the Sacramento River, with the closest residences approximately one-half miles from the airport. Immediately east of the airport is Metro Air Park, a commercial and industrial complex intended to complement and support the airport. Further to the east is north Natomas community in the City of Sacramento. A golf course, the Teal Bend Golf Club, is located immediately west of the airport. The land north of the County property is used for agriculture.

Remnant riparian woodland is located along the Sacramento River to the south and west of the airport, and in patches north of Elverta Road. Trees are also present along old fence lines within and adjacent to the AOA at the southern end of the airport.

An extensive network of drainage and agricultural supply ditches are present throughout the region including the AOA. At present, some of the ditches in the AOA are used to transport irrigation water to agricultural fields off County property. All of the drainage and agricultural supply ditches are hydrologically connected to the Sacramento River to the west and south of the project area.

PROJECT PROPOSAL

The Sacramento County Department of Airports has recently completed a review of the existing Master Plan (2007) for SMF (reference Plate PD-2 for the existing Master Plan exhibit). The current project looks at a development and operation horizon of 20 years (2018 through 2038) with four Planning Activity Levels (PALs). Due to the extended 20 year planning horizon, Master Plan projects or facilities identified in PAL 4 (2034-2038) are beyond the scope of this SEIR and are not analyzed at the project level.

The update largely consists of revisions to proposed airport projects and facilities based on revised aviation forecasts. The update looks at previously identified projects and projected growth at SMF. Many of the updates center on the timing of the project (planning phase) along with minor changes to locations and size of facilities. A direct comparison of the Master Plan and Master Plan Update (MPU) facilities and planning phasing are presented in Table PD-1 and MPU exhibits are presented in Plate PD-3 through 7; notable changes are highlighted below:

- Removal of the third runway and taxiway system;
- Relocating the economy parking lot from south of I-5 to north of I-5, east of Airport Boulevard;
- Changing the economy parking lot south of I-5 to commercial uses and moving it to PAL 4;
- Changing the location of Elkhorn Boulevard extension;
- Construction of a third Concourse (C), adjacent to Concourse B;
- Construction of new airline maintenance, rehabilitation and overall MRO facilities;
- Construction of a new consolidated rental car facility;
- Revising the acreage, location and phasing of commercial development proposed north of I-5, from 77 acres to approximately 189 acres;
- Move phasing of 135 acres of commercial development north of Elverta Road to PAL 3; and
- Movement of the new cargo building and apron from the south**east**~~west~~ side to the north airfield, east of Runway 16R and increasing the size from 226 thousand square feet (kft^2) to 950kft^2.
  - The Cargo Facility is comprised of three buildings (sortation building, a ground crew building, and an equipment maintenance building),

associated parking, and a taxilane on 192 acres on the north side of the airport (Plate PD-8). As shown on the conceptual plan, the three buildings would total 950,000 square feet, have 13 aircraft parking spaces, 1,314 parking spaces, and 343 trailer parking spaces. Access to the project site is provided on Earhart Drive from West Elverta Road. Intersection improvements for Earhart Drive and West Elverta Road, which include widening and signalization, are proposed as part of this project.

As stated earlier, the SMF Master Plan Update is the planning document used to determine when and where growth occurs at the airport. All projects or elements presented in the Master Plan Update are independent projects, and upon project initiation, additional federal or local review may be necessary. A project under the Master Plan Update will be evaluated under the 2007 EIR and this SEIR. Projects which do not meet the assumptions presented in these document will require additional CEQA review. At the time of preparing this document, the cargo facility is a component of the Master Plan Update, where project specific impacts have been identified in this SEIR.

Table PD-1: Master Plan Project Comparison Table

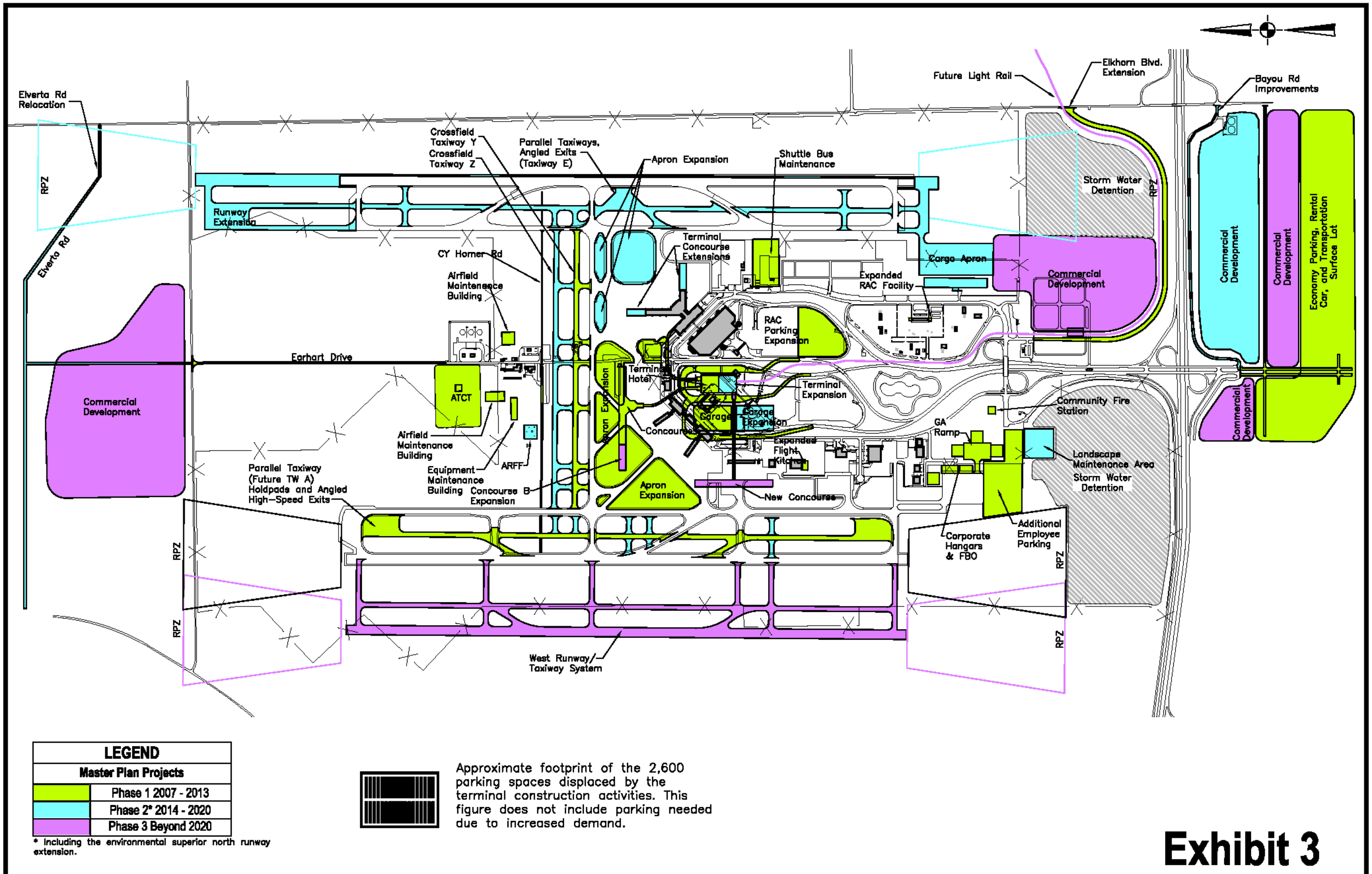
Location	Master Plan Element	
2007 EIR Phase 1 (2007-2013)		MPU Notes
Passenger Terminal	New landside passenger terminal (Terminal B), airside concourse (Concourse B; accommodating a total of 23 aircraft gates), aircraft apron, and associated on-airport roadway modifications.	Completed 19 of 23 gates
	Expanded Concourses A and B. By PAL 4, the 2020 MPU recognizes the requirement for an additional 13 gates. Based on forecasts, the preferred alternatives took into account the building lifespan of Concourse A and physical constraints to recommend that focus be shifted to Concourse B expansion and the long-term Concourse C construction. However, if it is determined that enough useful life exists in Concourse A at the time PAL 1 is met or other fiscal constraints are of concern in the near future, then a minimal expansion of the Concourse A may also occur (Up to the 4 gates as considered in the 2007 MP). Therefore, the expansion Concourse A has not been entirely ruled out, but in most cases does not make sense monetarily.	No Change
	Expansion to passenger Terminal B	PAL 2 Relocated adjacent to Concourse B
	Hotel The hotel was initially design feature of Terminal B as a close-in amenity, but was never constructed. Its need is to be determined based on the construction of other hotel properties in the vicinity of SMF in the near future.	PAL 4 Location moved to south of Elkhorn Blvd, north of I-5
	Parking Garage	Shifted south to avoid roadway impacts
Airside (including support facilities)	New Taxiway Y (Taxiway W) parallel to existing Taxiway Y and south of Cy Homer Road	Completed
	Full-length parallel Taxiway A rehabilitation	PAL 2
	Taxiway A, holdpads, and high-speed taxiway exits for Runway 16R/34L (west runway)	PAL 3
	New Airport Traffic Control Tower (ATCT) north of Cy Homer Road and west of Earhart Drive	PAL 4
	New airport, airfield, and equipment maintenance buildings north of Cy Homer Road	PAL 2
	General aviation area including corporate hangars, fixed base operator facility, and apron	PAL 2
Landside	Expanded rental car parking surface lot between Airport Boulevard and Earhart Drive, and expanded	Remove

	rental car terminal facility east of Airport Boulevard and McNair Circle	
	Elkhorn Boulevard extension from Metro Air Park to Crossfield Drive	No Change
	Employee parking surface lot north of I-5 and west of Airport Boulevard to accommodate 1,500 automobile parking spaces	Complete
	Landscape maintenance area south of the General Aviation area and employee parking lot	No Change
	New remote economy parking and rental car overflow facility to accommodate 13,800 automobile parking spaces south of I-5. Access to I-5 and SMF would be provided with an extension of Airport Boulevard to the parking facility.	Economy parking and over flow moved north of I-5, PAL 2,3 South of I-5, changed to commercial uses (114 acres) and moved to PAL 4
	New ground service equipment maintenance building east of Aviation Drive. The prior 2007 MP location conflicts with the construction of the future EV bus charging lot surrounding the existing East Vault.	Removed
	New community fire station at northwestern corner of Lindbergh Drive and Crossfield Drive. The fire station is to be built by the City of Sacramento Fire Department on County-owned land.	PAL 1
	Expanded flight kitchen facility The space available for this project is now occupied by the air cargo sort/warehouse facility constructed in FY 2019/2020.	Remove
	New shuttle bus maintenance and staging facility east of Aviation Drive	No Change
	Strengthen and overlay Earhart Drive to the existing Elverta Road intersection	No Change
	Widen Cy Homer Road to two lanes	No Change
	Acquire two areas (48 acres and 313 acres) north of I-5 for buffer area and one area (442-460 acres) south of I-5 for aircraft approach protection	Remove
2007 EIR Phase 2 (2014-2020)		MPU Notes
Passenger Terminal	Expand landside Terminal B to create a centralized landside terminal Expansion allows for future proposed Concourse C and additional gates to Concourse B	No Change
	Expand Concourse B to add four gates	PAL 2 Changed to 6 Gates
	Expand Terminal B parking garage	PAL 3
	Extend Terminal A Concourse piers to accommodate four additional aircraft gates	No Change

Airside (including support facilities)	2,400-foot extension of Runway 16L/34R (east runway) to provide a total runway length of 11,000 feet	PAL 4
	New localizer, Instrument Landing System (ILS) glide slope, and High Intensity Approach Lighting System with Sequenced Flashing Lights (ALSF-2) for new ILS approach to Runway 34R	PAL 4
	New high-speed taxiway exits for Runway 16R/34L	PAL 2 Modified to partial parallel taxiways on the ends of the runway only
	New full-length parallel Taxiway E and holding pads	Remove
	Runway 16L/34R high-speed taxiway exits	Completed
	New north crossfield Taxiway V (north of Taxiway W)	PAL 4 No Change
	Additional terminal apron in proximity to Terminal A concourse	In Progress
	New air cargo building and air cargo apron with a taxiway connector to the Runway 34R end The air cargo building shown near the 34R end in the 2004 MP no longer meets the existing needs. The future building was moved to the north airfield along 34L for ample space and access.	PAL 1 Moved to north airfield and expanded, Runway 16R end
	New Aircraft Rescue & Fire Fighting (ARFF) building north of CY Homer Road and west of Earhart Drive	In Progress
	Extension of Cy Homer Road to both existing runways	PAL 2; No Change
Landside	Relocate Elverta Road to avoid Runway 16L Runway Protection Zone (RPZ) and extend Earhart Drive to the relocated Elverta Road	PAL 4
	Clearer signage on Bayou Way between Airport Boulevard and Power Line Road	PAL 1
	Commercial development on approximately 79 acres south of I-5	PAL 4
Ditch Modifications	Place ditches within culverts and pipes in RPZ and road areas	PAL 4
2007 EIR Phase 3 (Beyond 2020)		MPU Notes
Passenger Terminal	New Concourse to serve third runway The 2007 MP Alternative E2 placed the future Concourse C expansion perpendicular to Concourse B without any direct connection. In the 2020 MPU, the placement has been shifted to allow for a moving walkway connection between both concourses, which provides an alternative means of movement and a shared, security screening check point that will be expanded to accommodate	PAL 2 New concourse to serve increase in passenger demand; relocated adjacent to Concourse B

	both concourses.	
Airside	New 8,600-foot runway parallel to and 1,200 feet west of existing Runway 16R/34L The Airport's existing and forecasted operations through the planning horizon are below the maximum capacity for the current two runways. There is no longer a justification for this project.	Remove
Landside	Light rail and/or bus rapid transit service to SMF passenger terminal	PAL 4 No Change
	Commercial development on approximately 77 acres north of I-5 and east of Airport Boulevard, and approximately 135 acres north of existing Elverta Road	PAL 3 Commercial development north of I-5, south of Elverta Road expanded to 189 acres; no change to development north of existing Elverta Road
	Commercial development on approximately 46.5 acres south of I-5	PAL4
New Master Plan Elements		
Airside	Airline maintenance, rehabilitation and overhaul MRO facility	PAL 1, 2; Aircraft MRO East and Northwest PAL 4 Aircraft MRO Northeast
Landside	Construct new consolidated rental car facility to the east of Airport Blvd., west and south of parking garage; this replaces rental car parking lot and terminal expansion	PAL 2

Plate PD-2: 2004 Master Plan Facilities Phasing Exhibit



DRAWING: PHASING PLAN		DRAWN BY: MoultonK	SACRAMENTO INTERNATIONAL AIRPORT Master Plan Components After Completion	SACRAMENTO COUNTY AIRPORT SYSTEM 6900 AIRPORT BLVD. SACRAMENTO, CA 95837
SHEET: 1	SCALE: N.T.S.	DATE: 6/15/2007		

Plate PD-3: Master Plan Update PALs 1-4

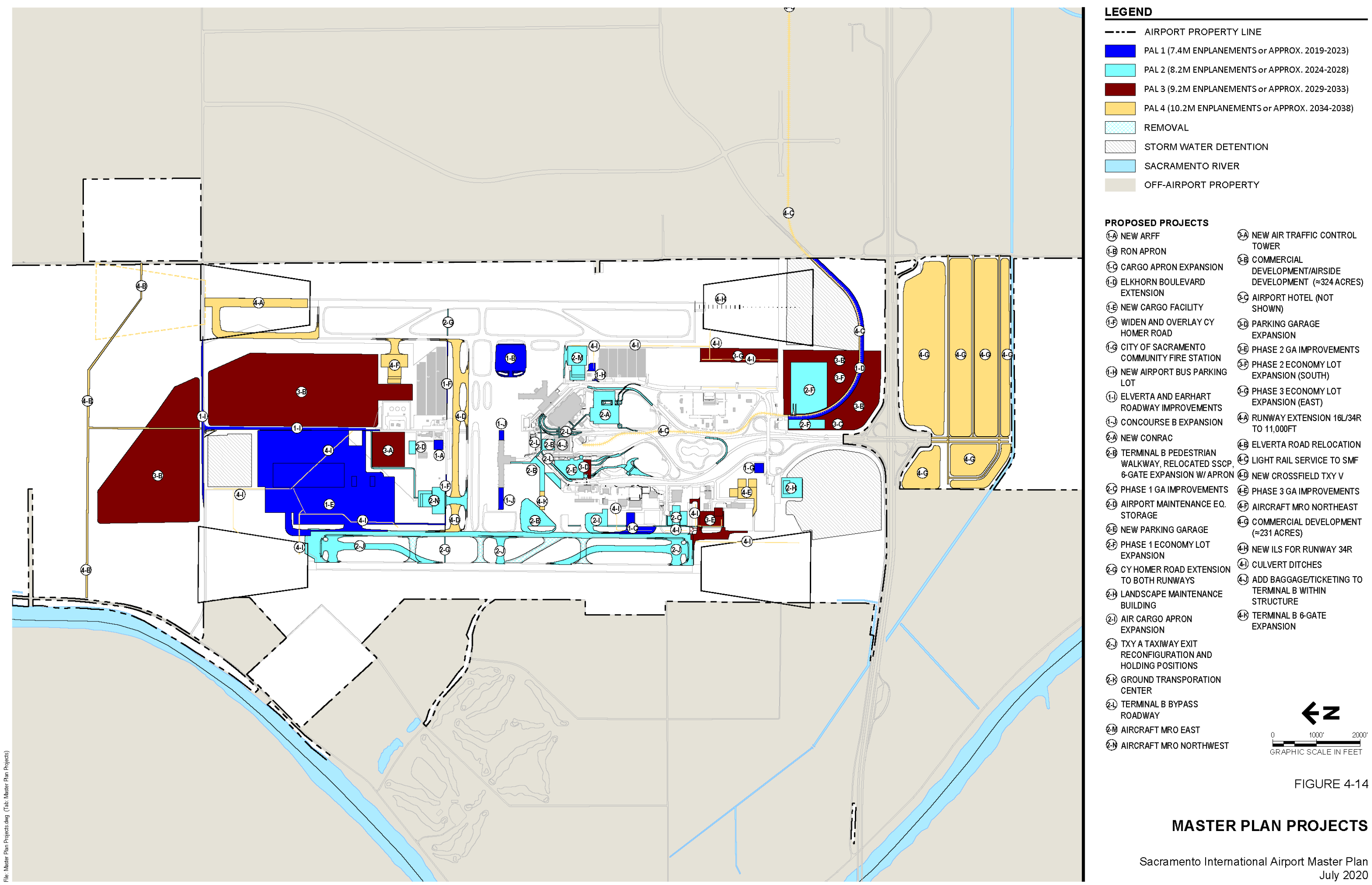


Plate PD-4: Master Plan Update PAL 1

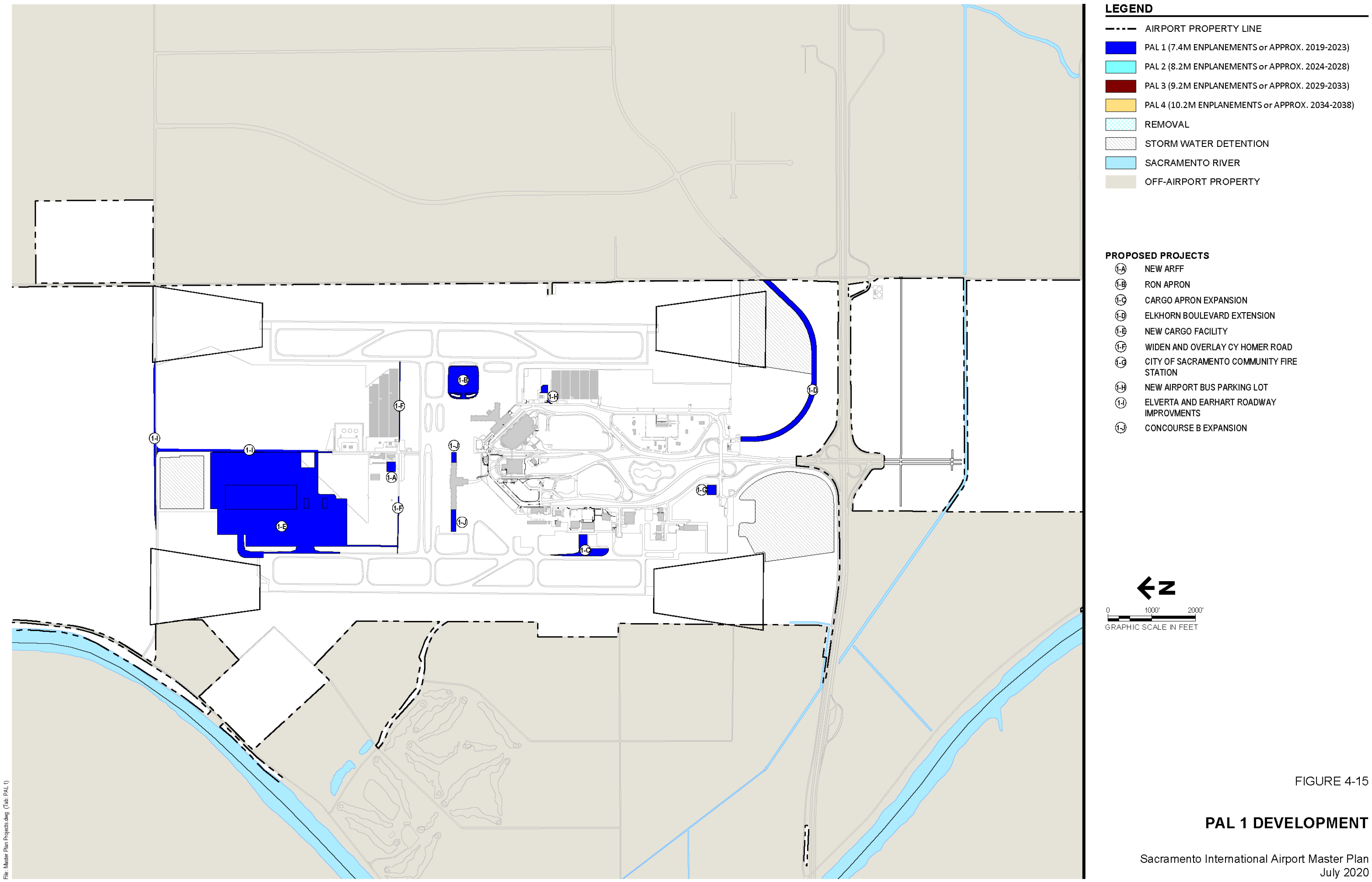


FIGURE 4-15

PAL 1 DEVELOPMENT

Sacramento International Airport Master Plan
July 2020

Plate PD-5: Master Plan Update PAL 2

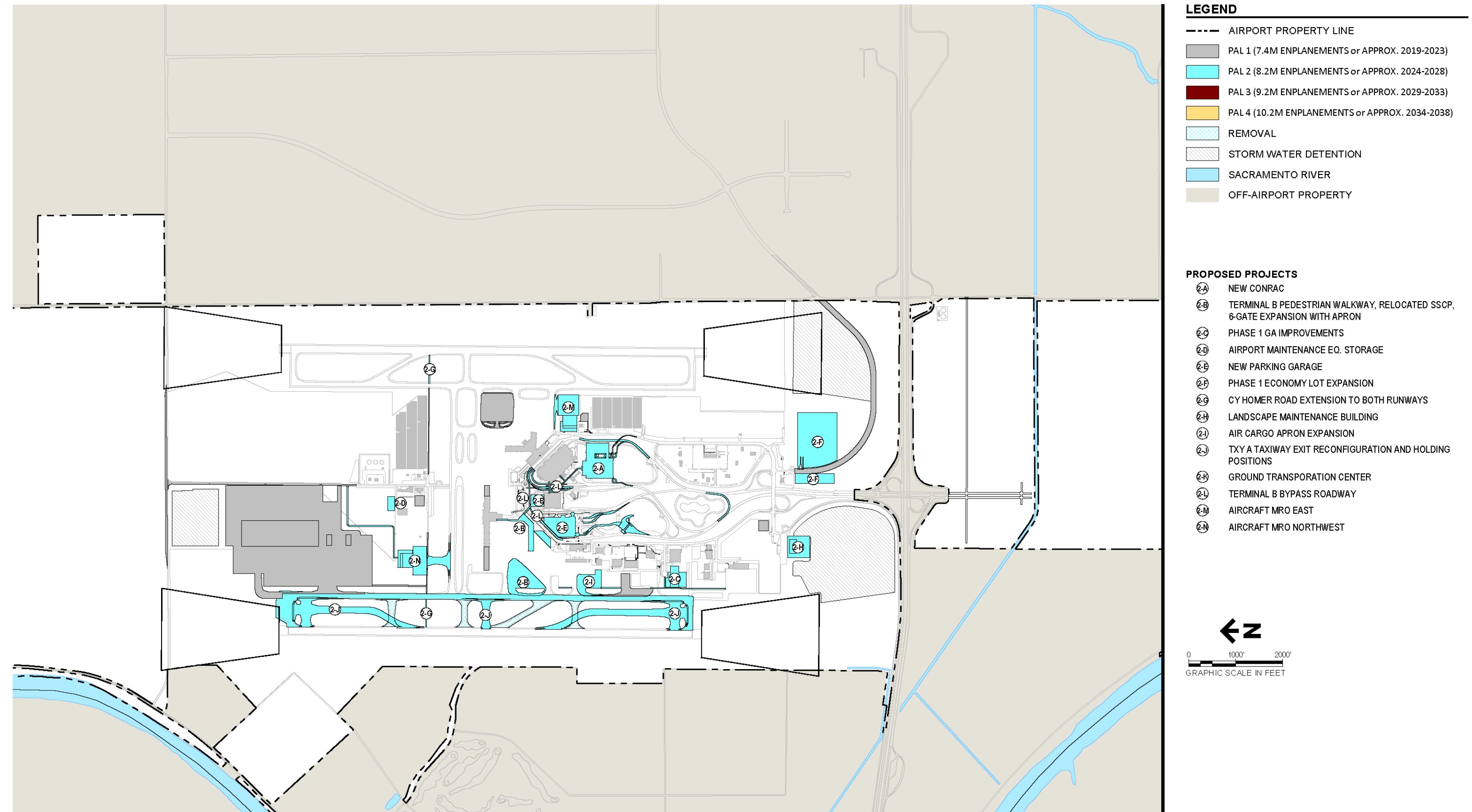


FIGURE 4-16

PAL 2 DEVELOPMENT

Sacramento International Airport Master Plan
July 2020

Plate PD-6: Master Plan Update PAL 3

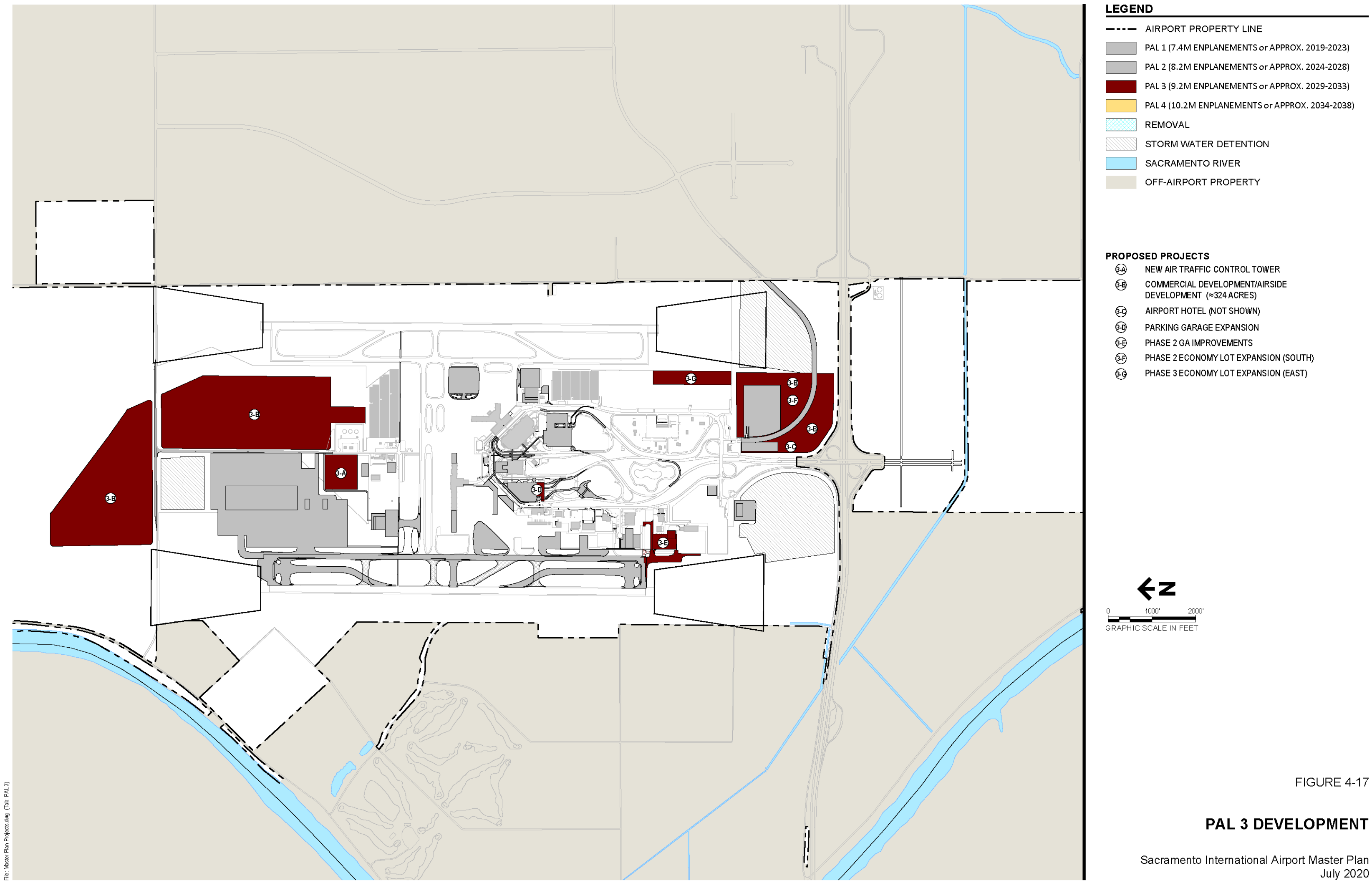


Plate PD-7: Master Plan Update PAL 4

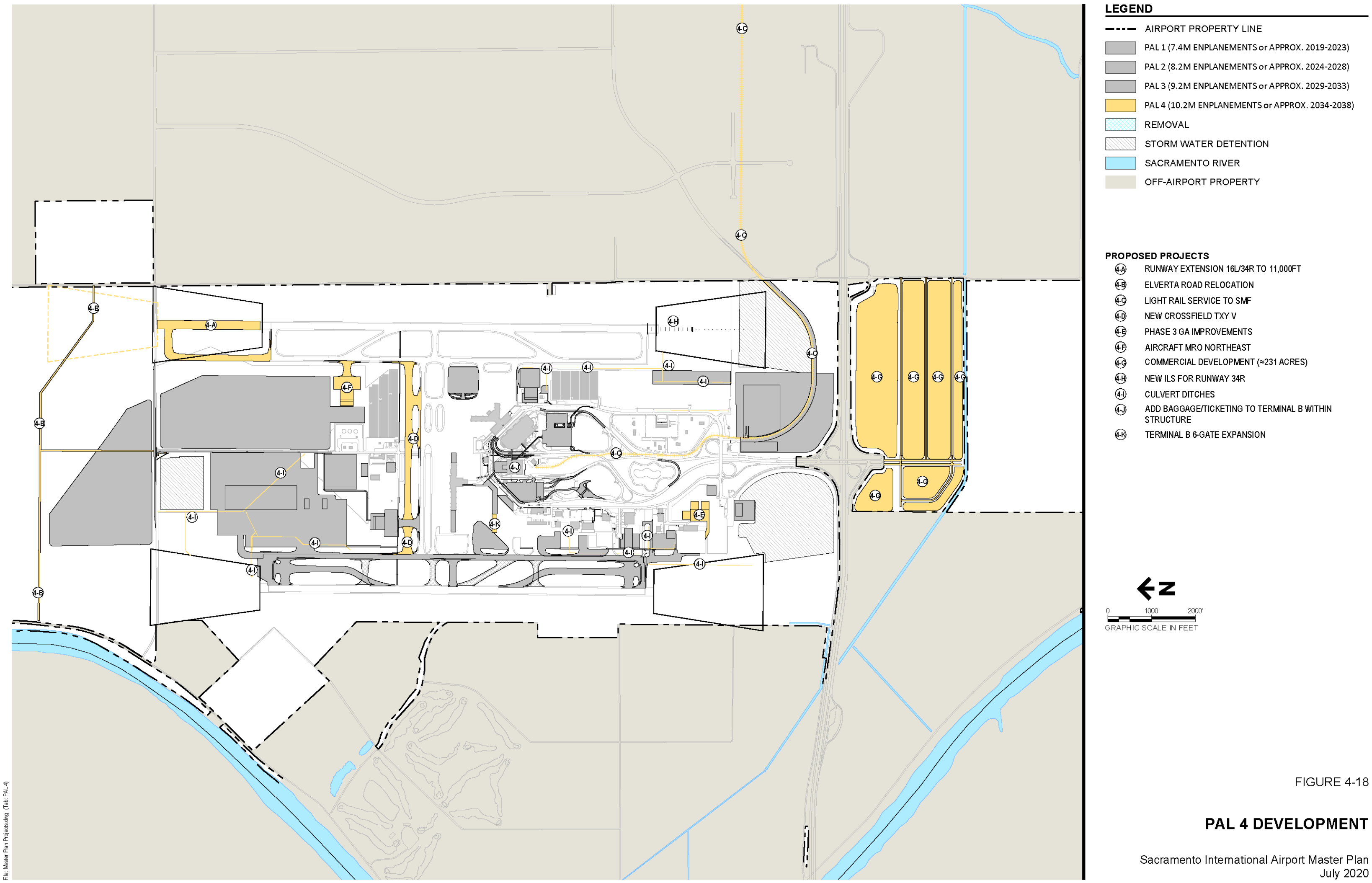
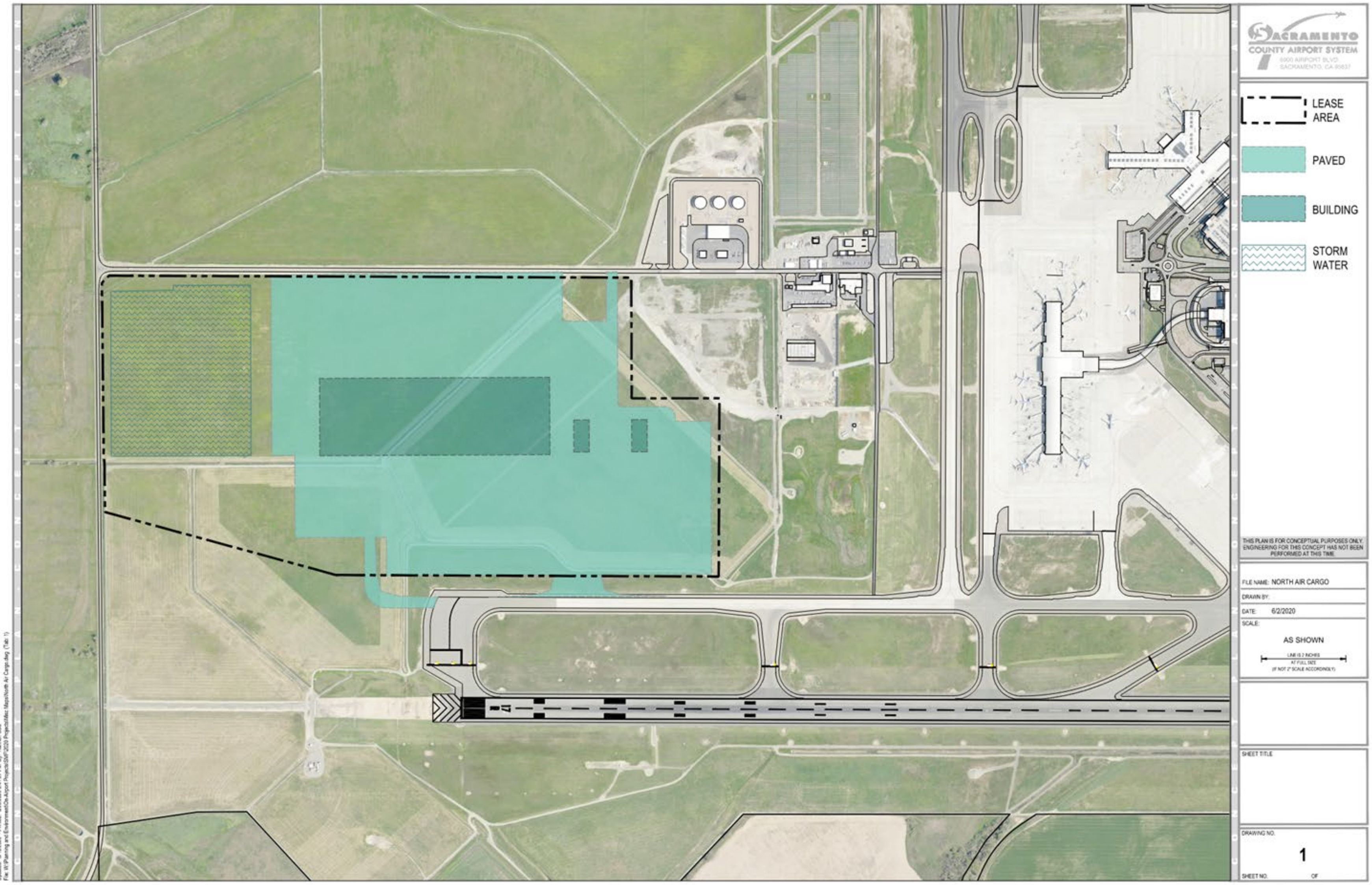


Plate PD-8: Conceptual Cargo Plan (North Airfield)



PROJECT OBJECTIVES

The objectives for the SMF Master Plan Update project are based on the visions for the future of the airport developed during the planning process with input from stakeholders and the public. The project objectives are to:

- Surround the airport with compatible and supportive land uses that provide for airport expansion and buffering from incompatible land uses, as well as providing opportunities for compatible development and wildlife habitat.
- Provide high quality, multimodal, and congestion-free access to the airport that facilitates a seamless trip for passengers between their point of origin and the gate.
- Create a customer friendly, easily accessible airport that provides opportunities for additional passenger amenities (e.g., sit-down restaurant, close-in hotel, and meeting place), improves passenger connectivity between terminals, and eases use for physically challenged individuals (number of level changes).
- Accommodate regional air travel needs by serving domestic and international destinations (from Sacramento travelers can get anywhere) and satisfying increasing travel needs of the region's growing conference, convention, and tourism activities.
- Provide adequate capacity to serve travel demand for the next 20 years and beyond, accommodate Group VI aircraft, and accommodate cargo and GA[1] with the flexibility to serve changing demand levels among commercial, cargo, and GA.
- Provide an international gateway for the Sacramento region by having a runway of adequate length to serve international markets and a Federal Inspection Services facility that is integral to the domestic flight facilities.
- Provide safe and efficient operations by having a facility layout that enables passengers to move safely and efficiently, and an airfield with all-weather capability that is compatible with airspace needs of other airports and resolves the current inefficient movement of aircraft on the Terminal A apron inherent in the apron's V-shaped design.
- Convey a Sacramento "sense of place".

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[1] Group VI aircraft are aircraft with a tail height of 66 feet up to 79 feet and a wing span of 214 feet up to 261 feet. **The aircraft currently in this aircraft group are the Airbus A380 and 747-8.**

- Provide an airport that is environmentally responsible by minimizing existing impacts and preventing new impacts, and minimizing aircraft and ground transportation movements and congestion.
- Provide facilities that have the flexibility to accommodate traffic activity changes such as more commercial traffic than forecast and more cargo traffic than forecast.
- Provide an airport that plays a lead role in regional economic development efforts.
- Provide an airport that is financially solvent and efficient in terms of capital costs and operating and maintenance costs.

INTENDED USES OF THE EIR

The Sacramento County Board of Supervisors will use the information contained in the SEIR in evaluating the proposed project and rendering a decision to approve or deny the Master Plan update and proposed cargo facility. The SEIR will serve as an informational document for the general public as well. Responsible agencies may also use the SEIR as needed for subsequent discretionary actions. Based on the potential effects known at this time, responsible agencies may include (but may not be limited to) the Federal Aviation Administration, United States Fish and Wildlife Service, United States Army Corps of Engineers, California Department of Fish and Wildlife, the Central Valley Regional Water Quality Control Board, Sacramento Municipal Utility District and/or Pacific Gas and Electric

Table PD-2 below includes information required by Section 15124 of the CEQA Guidelines and summarizes the following intended used of the EIR:

- A list of agencies that are expected to use the EIR in their decision making.
- A list of permits and other approvals required to implement the project.
- A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or polices.

Table PD-2: Subsequent Permits, Approvals, Review, and Consultation Requirements

Agency	Approval
Sacramento County Board of Supervisors	Final Supplemental Environmental Impact Report Certification
Sacramento County Board of Supervisors	Project Approval
Federal Aviation Administration	Project Approval
Sacramento Metropolitan Air Quality Management District	Fugitive Dust Prevention and Control Plan
Regional Water Quality Control Board – Central Valley Region	NPDES Waste Discharge Permit
Regional Water Quality Control Board – Central Valley Region	Section 401 Certification
California Department of Fish and Wildlife	Streambed Alteration Agreement, California Endangered Species Act Take Permit
U.S. Army Corps of Engineers	Section 404 Permit
U.S. Fish and Wildlife Service	Federal Endangered Species Act Take Permit

2 ALTERNATIVES

INTRODUCTION

This chapter describes alternative versions of the proposed project that may lessen environmental impacts, or that provide meaningful information to foster informed decisions. Impact discussion are presented in a qualitative rather than quantitative manner and are briefer than those found in the project chapters, consistent with the California Environmental Quality Act (CEQA) Guidelines Section 15126.6(d). This chapter does not repeat background discussions or other subject matter that has already been described in the topical chapters of this EIR, but focuses on those Alternative impacts, which are substantively different from the impacts described for the project. Reviewers are encouraged to read the topical chapters describing project impacts prior to reading the Alternatives chapter.

RANGE OF ALTERNATIVES

According to Section 15126.6 of CEQA Guidelines:

> An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibility attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.

The purpose of this section is to identify alternative project designs that would mitigate, lessen, or avoid the significant effects of the project. The project would result in significant and unavoidable impacts to air quality, climate change, land use and transportation; and less than significant impacts with mitigation to biological resources, cultural resources, and tribal cultural resources. To foster meaningful public discussion and informed decision-making, a range of reasonable alternatives to the project is provided. This range includes the "No Project" alternative, the purpose of which is to allow the hearing body to compare the impacts of approving the project to the impacts of not approving the project. The "No Project" alternative describes what would happen if the existing land use plan remained in effect.

ALTERNATIVES CONSIDERED BUT REJECTED

The following alternative was considered but ultimately rejected due to infeasibility and/or little benefit to the environment.

ALTERNATIVE LOCATION

Pursuant to CEQA Guidelines Section 15126.6(f)(2)(A), only alternative locations that would avoid or substantially lessen any of the significant effects of the project need to be considered. One of the significant changes to the existing SMF Master Plan is the proposed cargo facility. The proposed cargo facility is identified in Planning Activity Level (PAL)1, and could be accommodated at Mather Airport. The SMF location has been cited as being preferable in prior inquires due to its location and proximity to both Interstate 5 and 80 and recent local distribution facility development. If the facility was located at Mather Airport, the cargo would have to be trucked further to local distribution facilities across the region. This would demonstrably increase GHG emissions for the Sacramento region. For this reason, an alternative location is rejected from further analysis. Further, as the court in *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal.App. 4th 477, held, an EIR for a development consistent with applicable land use policies does not need to examine alternate sites for the project because a development proposal that implements existing planning policies should not prompt reconsideration of those policies, which themselves have already undergone environmental review. Here, the project is generally consistent with existing Airport Master Plan planning policies, in that a new cargo facility was anticipated at the airport, further rendering an alternative project location unnecessary.

Description of Alternatives

Alternative 1: Remove Commercial Development North of Elverta Road

This alternative would reduce the proposed commercial development area in PAL 3 by removing the approximate 135-acre area north of Elverta Road (reference Plate ALT-1). This alternative would still meet the applicant's project objectives to provide potential areas to surround the airport with compatible and supportive land uses. The remaining available commercial acreage north of I-5 and south of Elverta Road is approximately 189 acres.

Alternative 2: New Construction Meets Envision Verification

This alternative would require all new development to meet Envision verification silver or above, and meet conservation point level for Resources Allocation- Energy and Water, and Climate Change and Resilience- Emissions (Plate ALT-2). Envision is a Sustainable Infrastructure Framework developed by the Institute for Sustainable Infrastructure. Envision is a guide to plan and build more sustainable and resilient infrastructure. There are five categories and 64 sustainable and resilience indicators or "credits". Depending on the conservation measures implemented, credits are assigned a point value. Based on the overall point total, the project is verified to one of four levels – Verified (20% of maximum point value), Silver (30%), Gold (40%), and Platinum (50%).

This alternative would further reduce construction and operational air quality and GHG emissions associated with new Master Plan elements, while meeting the applicant's objective to provide an airport that is environmentally responsible and is financially solvent in operating and maintenance costs.

NO PROJECT ALTERNATIVE

The no project alternative would assume that the existing SMF Master Plan would continue to be the guiding land use planning document for the airport. The Master Plan elements would continue to be implemented as facilities become necessary based on airport projections (reference Plate ALT-3).

Plate ALT-1: Alternative 1

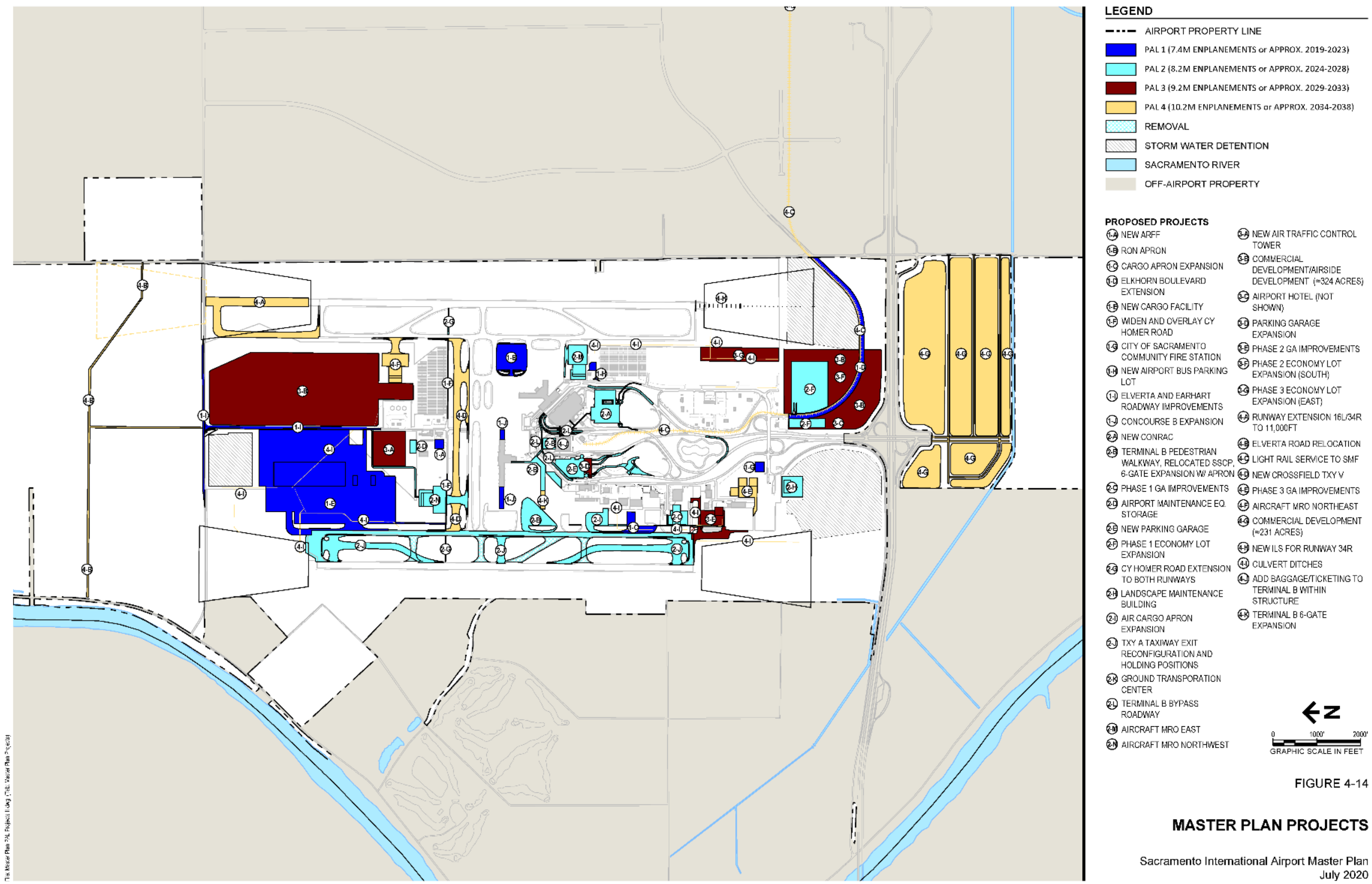


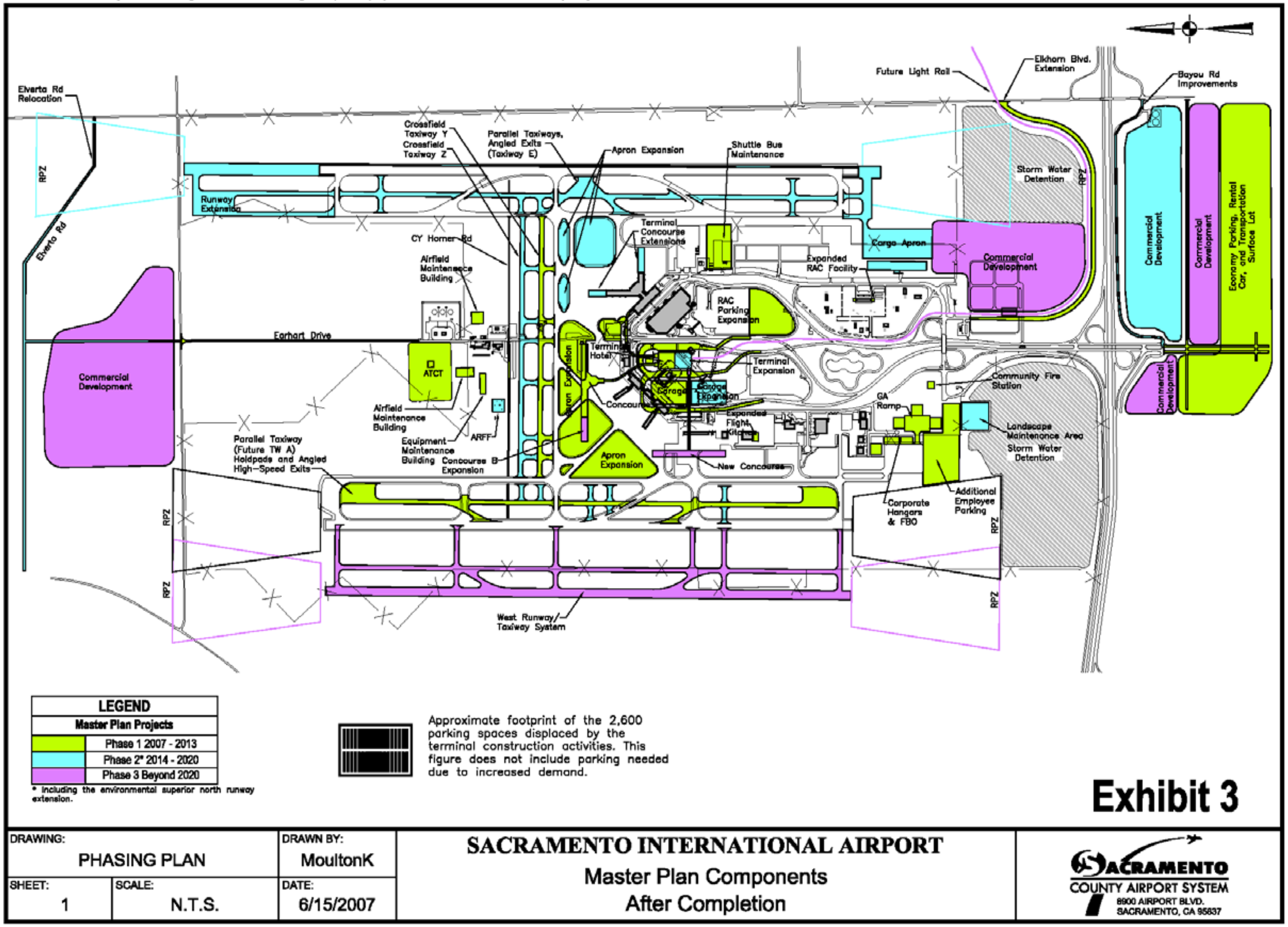
Plate ALT-2: Envision Verification Table

ENVISION POINTS TABLE

			Improved	Enhanced	Superior	Conserving	Restorative	Maximum Points
Quality of Life	Wellbeing	QL1.1 Improve Community Quality of Life	2	5	10	20	26	200
		QL1.2 Enhance Public Health & Safety	2	7	12	16	20	
		QL1.3 Improve Construction Safety	2	5	10	14	—	
		QL1.4 Minimize Noise & Vibration	1	3	6	10	12	
		QL1.5 Minimize Light Pollution	1	3	6	10	12	
		QL1.6 Minimize Construction Impacts	1	2	4	8	—	
	Mobility	QL2.1 Improve Community Mobility	1	3	7	11	14	
		QL2.2 Encourage Sustainable Transportation	—	5	8	12	16	
		QL2.3 Improve Access & Wayfinding	1	5	9	14	—	
	Community	QL3.1 Advance Equity & Social Justice	3	6	10	14	18	
		QL3.2 Preserve Historic & Cultural Resources	—	2	7	12	18	
		QL3.3 Enhance Views & Local Character	1	3	7	11	14	
		QL3.4 Enhance Public Space & Amenities	1	3	7	11	14	
Leadership	Collaboration	LD1.1 Provide Effective Leadership & Commitment	2	5	12	18	—	182
		LD1.2 Foster Collaboration & Teamwork	2	5	12	18	—	
		LD1.3 Provide for Stakeholder Involvement	3	6	9	14	18	
		LD1.4 Pursue Byproduct Synergies	3	6	12	14	18	
	Planning	LD2.1 Establish a Sustainability Management Plan	4	7	12	18	—	
		LD2.2 Plan for Sustainable Communities	4	6	9	12	16	
		LD2.3 Plan for Long-Term Monitoring & Maintenance	2	5	8	12	—	
		LD2.4 Plan for End-of-Life	2	5	8	14	—	
	Economy	LD3.1 Stimulate Economic Prosperity & Development	3	6	12	20	—	
		LD3.2 Develop Local Skills & Capabilities	2	4	8	12	16	
		LD3.3 Conduct a Life-Cycle Economic Evaluation	5	7	10	12	14	
Resource Allocation	Materials	RA1.1 Support Sustainable Procurement Practices	3	6	9	12	—	196
		RA1.2 Use Recycled Materials	4	6	9	16	—	
		RA1.3 Reduce Operational Waste	4	7	10	14	—	
		RA1.4 Reduce Construction Waste	4	7	10	16	—	
		RA1.5 Balance Earthwork On Site	2	4	6	8	—	
	Energy	RA2.1 Reduce Operational Energy Consumption	6	12	18	26	—	
		RA2.2 Reduce Construction Energy Consumption	1	4	8	12	—	
		RA2.3 Use Renewable Energy	5	10	15	20	24	
		RA2.4 Commission & Monitor Energy Systems	3	6	12	14	—	
	Water	RA3.1 Preserve Water Resources	3	5	7	9	12	
		RA3.2 Reduce Operational Water Consumption	4	9	13	17	22	
		RA3.3 Reduce Construction Water Consumption	1	3	5	8	—	
		RA3.4 Monitor Water Systems	1	3	6	12	—	
Natural World	Siting	NW1.1 Preserve Sites of High Ecological Value	2	6	12	16	22	232
		NW1.2 Provide Wetland & Surface Water Buffers	2	5	10	16	20	
		NW1.3 Preserve Prime Farmland	—	2	8	12	16	
		NW1.4 Preserve Undeveloped Land	3	8	12	18	24	
	Conservation	NW2.1 Reclaim Brownfields	11	13	16	19	22	
		NW2.2 Manage Stormwater	2	4	9	17	24	
		NW2.3 Reduce Pesticide & Fertilizer Impacts	1	2	5	9	12	
		NW2.4 Protect Surface & Groundwater Quality	2	5	9	14	20	
	Ecology	NW3.1 Enhance Functional Habitats	2	5	9	15	18	
		NW3.2 Enhance Wetland & Surface Water Functions	3	7	12	18	20	
		NW3.3 Maintain Floodplain Functions	1	3	7	11	14	
		NW3.4 Control Invasive Species	1	2	6	9	12	
		NW3.5 Protect Soil Health	—	3	4	6	8	
Climate and Resilience	Emissions	CR1.1 Reduce Net Embodied Carbon	5	10	15	20	—	190
		CR1.2 Reduce Greenhouse Gas Emissions	8	13	18	22	26	
		CR1.3 Reduce Air Pollutant Emissions	2	4	9	14	18	
	Resilience	CR2.1 Avoid Unsuitable Development	3	6	8	12	16	
		CR2.2 Assess Climate Change Vulnerability	8	14	18	20	—	
		CR2.3 Evaluate Risk and Resilience	11	18	24	26	—	
		CR2.4 Establish Resilience Goals and Strategies	—	8	14	20	—	
		CR2.5 Maximize Resilience	11	15	20	26	—	
		CR2.6 Improve Infrastructure Integration	2	5	9	13	18	
							Maximum TOTAL Points	1,000

The Envision framework can be found at: https://sustainableinfrastructure.org/wp-content/uploads/EnvisionV3.9.7.2018.pdf

Plate ALT-3: No Project Alternative



IMPACTS AND ANALYSIS

A summary matrix is included at the end of this document clearly identifying the range of Alternatives and their respective impacts to select environmental topics in relation to the proposed project.

AGRICULTURAL LAND USE RESOURCES

The proposed project's impacts to agricultural and land use resources are significant and unavoidable. Only Alternative 1 would further reduce impacts associated with the permanent loss of Farmland of Local Importance.

ALTERNATIVE 1

Much of the Airport land is currently classified as Farmland of Local Importance on the 2018 Farmland Inventory Map for Sacramento County. As noted in SEIR Chapter 8, the lands in between the runways and within the Airport Operation Area (AOA) would not ever be farmed due to conflicts with airport operations. Therefore only the area outside of the AOA is considered in the impacts analysis. By removing the proposed commercial development north of Elverta Road, there is no longer an impact to Important Farmlands. Development South of I-5 is shown on the ultimate Master Plan; however, impacts are not considered in this document. This alternative would remove impacts associated with the permanent loss of Farmland of Local Importance.

ALTERNATIVE 2

The development north of Elverta Road would remain and therefore impacts to agricultural land use resources would remain the same.

NO PROJECT ALTERNATIVE

The existing SMF Master Plan identified development north of Elverta Road and south of I-5; however, much of that development was in Phase 3, considered beyond the scope of the prior EIR. Agricultural land use impacts were not identified for the area north of Elverta Road, but were identified for the areas to be converted for urban uses south of I-5 (remote economy parking and commercial development). A total of 190 acres of prime farmland would be converted and mitigation was required pursuant to General Plan policies. This alternative would slightly increase the impacts to farmland as compared to the proposed project.

AIR QUALITY/GREENHOUSE GASES

The proposed project's impacts to air quality and greenhouse gas emissions are significant even with mitigation for operational impacts. All Alternatives would further reduce these impacts.

ALTERNATIVE 1

The proposed reduction of 135 acres of commercial development would slightly reduce air quality and GHG emissions associated with construction, operation of the buildings, and new mobile emissions over the proposed project.

ALTERNATIVE 2

The proposed requirement to have all new master plan elements meet Envision verification silver, and specifically the conservation point level for energy consumption, water consumption and GHG emissions, would reduce construction and operational air quality and GHG emissions associated with the building emissions. This would reduce the project's contribution to air quality and GHG emissions over the life of the buildings.

NO PROJECT ALTERNATIVE

The existing air quality emissions were considered significant and unavoidable in the prior EIR. Greenhouse gas emissions were discussed in the prior EIR; however, at the time, there were no set thresholds for GHG emissions and no impact conclusion was made. This alternative has less acreage of commercial uses and therefore would have reduced operational and GHG emissions associated with construction, building operation, and new mobile emissions (employees) as compared to the proposed project.

BIOLOGICAL RESOURCES

The proposed project's impacts to biological resources consist of: loss of wetlands, nesting and foraging habitat disruption, removal of giant garter snake habitat, and loss of trees/riparian habitat. Impacts are potentially significant, but can be reduced to less than significant with mitigation. Only Alternative 1 would further reduce impacts associated with biological resources.

ALTERNATIVE 1

Removing the area north of Elverta Road would eliminate impacts associated with Swainson's hawk foraging habitat, removal of riparian and oak woodlands. Approximately 1.89 acres of wetlands and waters of the U.S. would not be filled, and as such, impacts to giant garter snake aquatic and upland habitat would be reduced.

ALTERNATIVE 2

There would not be a change in the impacts to biological resources since the development areas would not be changed.

NO PROJECT ALTERNATIVE

The prior EIR identified similar impacts associated with biological resources (wetlands and species) for Master Plan elements identified in Phases 1 and 2. This alternative did not evaluate impacts for commercial development north of Elverta Road; therefore, there would be a reduction in impacts to wetland, riparian and species as compared to the proposed project. It did evaluate impacts associated with development south of I-5, which would have greater impacts to wetlands and species than the proposed project. Overall, this alternative would have similar impacts as the proposed project.

Cultural and Tribal Resources

The proposed project's impacts to cultural resources are already less than significant with mitigation. Only Alternative 1 would further reduce these impacts.

Alternative 1

This alternative reduces the acreage of ground disturbance by 135 acres. Further the area north of Elverta Road is closer to known archeological and tribal resources. Thereby the distance of proposed ground disturbance from these resources would be increased, reducing the potential to uncover buried deposits. Impacts associated with unanticipated cultural or tribal resource discoveries is reduced under this alternative.

Alternative 2

There is no change to the proposed area of ground disturbance; therefore, the impacts associated with cultural and Tribal resources remain the same.

No Project Alternative

The prior EIR concluded a less than significant impact to cultural resources with recommended mitigation. Again, Master Plan projects identified in Phase 3 were not evaluated in the prior EIR; therefore, the commercial development north of Elverta Road was not specifically analyzed. The area was part of the Master Plan Survey area and the recommended mitigation measures would equally apply to this area as well. The impacts to cultural and tribal resources remain the same.

HYDROLOGY AND WATER QUALITY

The proposed project's impacts to hydrology and water quality are already less than significant. Alternative 1 and the No-Project Alternative would further reduce these impacts.

Alternative 1

This alternative would remove 135 acres of commercial development north of Elverta Road and would result in less ground disturbance and impervious surfaces, thereby reducing hydrology and water quality impacts. This alternative would slightly reduce these impacts over the proposed project.

Alternative 2

Hydrology and water quality impacts under Alternative 2 would be similar as those predicted for the project. While the Envision verification framework has categories for hydrology and water quality conservation, it is not the primary category enhanced by this alternative.

NO PROJECT ALTERNATIVE

The prior EIR analyzed impacts associated with hydrology and water quality. This alternative reduces impervious acreages over the proposed project, thereby reducing hydrology and water quality impacts. This alternative would slightly reduce these impacts over the proposed project.

NOISE

The proposed project's impacts to noise are less than significant without mitigation. Since there are no sensitive receptors near the project, even the slightest reduction of traffic and mechanical noise that would occur from removing the commercial development north of Elverta Road, would not be perceptible. By far, the dominating source of noise is associated with aviation flights and is not anticipated to change. All alternatives would have similar noise impacts.

PUBLIC SERVICES/UTILITIES

The proposed project's impacts to public service and utilities are less than significant without mitigation. It is recognized that growth at the airport is to occur with or without the proposed project. Over the last decade, public services and utilities have been upgraded and sized to accommodate future growth at the airport. All alternatives would reduce impacts to public services and utilities.

ALTERNATIVE 1

This alternative would remove 135 acres of commercial development north of Elverta Road directly corresponding to less demand for public services and utilities. This alternative would slightly reduce these impacts over the proposed project.

ALTERNATIVE 2

This alternative would implement construction and building techniques to substantially reduce consumption of energy and water. This would correspond in a reduction in demand for public utilities. This alternative would reduce these impacts over the proposed project.

NO PROJECT ALTERNATIVE

The prior EIR analyzed impacts associated with public services and utilities. The total acreages of commercial development are less with this alternative, which would correspond to less demand for public services and utilities. This alternative would slightly reduce these impacts over the proposed project.

TRANSPORTATION

The proposed project identified significant impacts associated employee vehicle miles traveled (VMT). Both the Master Plan Update and the proposed cargo facility (PAL 1) will exceed the regional employee average. The Master Plan Update will increase the number of passengers; however, a percentage of those passengers are recaptured, thereby resulting in an overall reduction in passenger VMT. This reduction will not be realized until PAL 2 or beyond; therefore, projects in PAL 1 (proposed cargo facility) will result in significant VMT impacts. Additionally, safety impacts were identified for area roadways (Elverta Road and I-5 southbound off-ramp intersection) due to the increase of vehicles generated by the proposed project. The No Project Alternative would reduce these impacts.

ALTERNATIVE 1

A small number of VMT associated with employees of the commercial development north of Elverta Road would be removed with this alternative. This would account for a slight reduction in VMT for the Master Plan overall; however, the overall employee VMT would remain significant.

This alternative would reduce the number of vehicles using Elverta Road; however, the proposed cargo facility was the major contributor to the increase of daily vehicles resulting in the safety concerns for the roadway. Likewise, this alternative would not significantly reduce the potential safety impact for the I-5 southbound off-ramp intersection. Safety impacts would not change.

ALTERNATIVE 2

There would be no change the in acreage of proposed commercial development; therefore, the impacts to traffic would not change.

NO PROJECT ALTERNATIVE

The prior EIR used a level of service (LOS) threshold to determine traffic and circulation impacts. This metric is no longer a valid metric to use in determining significant impacts and therefore, there is no a direct comparison with the proposed project and the No Project alternative. However, one can assume under the prior EIR analysis, the additional gates and concourse was included in the analysis and these facilities allow for additional passengers and greater capacity. It is expected that under this alternative a similar amount of recaptured passengers would be expected, thus impacts associated with passenger VMT would be similar. This alternative does not include the proposed cargo facility or additional commercial acreage and employee VMT associated with these uses would not occur; therefore, employee VMT impacts would be reduced.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an environmentally superior alternative be identified. The above analysis includes the No Project Alternative along with a range of alternatives in order to develop a reasoned choice. Often the No Project Alternative is the environmentally superior alternative; however, it cannot be considered because CEQA requires that if the environmentally superior alternative is the No Project Alternative, the EIR must identify another environmentally superior alternative from those remaining. Considering all remaining alternatives, the environmentally superior alternative is Alternative 1. This alternative would meet the applicant's need to provide updates to Master Plan elements, accommodate the proposed cargo facility and continue to provide a reasonable amount of commercial development areas.

Table ALT-1: Alternatives Summary Matrix

Environmental Impact	Alternative 1	Alternative 2	No Project Alternative
Agricultural Land Use	Reduced+++	Similar	Increased+
Air Quality & Greenhouse Gas	Reduced+	Reduced++	Reduced++
Biological Resources	Reduced++	Similar	Similar
Cultural & Tribal Resources	Reduced+	Similar	Similar
Hydrology and Water Quality	Reduced+	Similar	Reduced+
Noise	Similar	Similar	Similar
Public Services/Utilities	Reduced+	Reduce++	Reduced+
Transportation	Reduced+	Similar	Reduced++
	Impact level in comparison to the proposed project: Similar = environmental impacts are similar to those identified for the proposed project Reduced+ = environmental impacts are slightly reduced as compared to the proposed project Reduced++ = environmental impacts are moderately reduced as compared to the proposed project Reduced+++ = no environmental impact		

3 AIR QUALITY

INTRODUCTION

The prior EIR certified in 2007 for the Sacramento International Airport (SMF) Master Plan (Master Plan) evaluated impacts to air quality for Master Plan elements (or facilities) identified in Phase 1 or 2 (through year 2020). Master Plan elements identified in Phase 3 were not evaluated. The Federal Aviation Administration (FAA) recommends an airport master plan be updated every ten years or when there is a large-scale shift to proposed airside or landside facilities.

The proposed project shifts the phasing or timing of some facilities and increases the scale of other facilities. Notably, the proposed cargo facility increases from 226 thousand square feet to 950 thousand square feet; a change to location and phase of new concourse and number of gates; addition of a consolidated rental car facility; and changing the acreage, location and phasing of the commercial development north of I-5. **Since plans for the proposed cargo facility are currently under development, project specific impacts have been identified separately from the other changes to the Master Plan Update listed above.**

AIR QUALITY SETTING

The Sacramento Metropolitan Area is a federal ozone non-attainment area, and one of the top ten worst air quality areas nationally[1]. In Sacramento County, pollutants of greatest concern are ozone precursors (hydrocarbons and nitrogen oxides), carbon monoxide (CO), particulate matter (PM_{10} and $PM_{2.5}$), and other visibility-reducing material.

ATMOSPHERIC CONDITIONS

The geography and weather patterns of the Sacramento Valley are conducive to high air pollution levels. The mountain ranges surrounding the valley are natural air current barriers, which restrict most of the circulating winds of lower elevations from mixing and dispersing air pollutants of the valley. Sacramento is also subject to thermal air inversions, especially during the summer and fall months, wherein a layer of cool air is overlain by warmer air. Also, solar radiation from the abundant sunshine in Sacramento acts as a catalyst to drive chemical reactions between atmospheric pollutants such as reactive hydrocarbons and nitrogen oxides; the result is photochemical smog. Thus, the combination of surrounding mountains, abundant sunshine, thermal air inversions and wind patterns make the Sacramento area susceptible to high levels of air pollution.

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[1] American Lung Association, State of the Air 2019, ranked #5 for ozone.

EXISTING AIR QUALITY

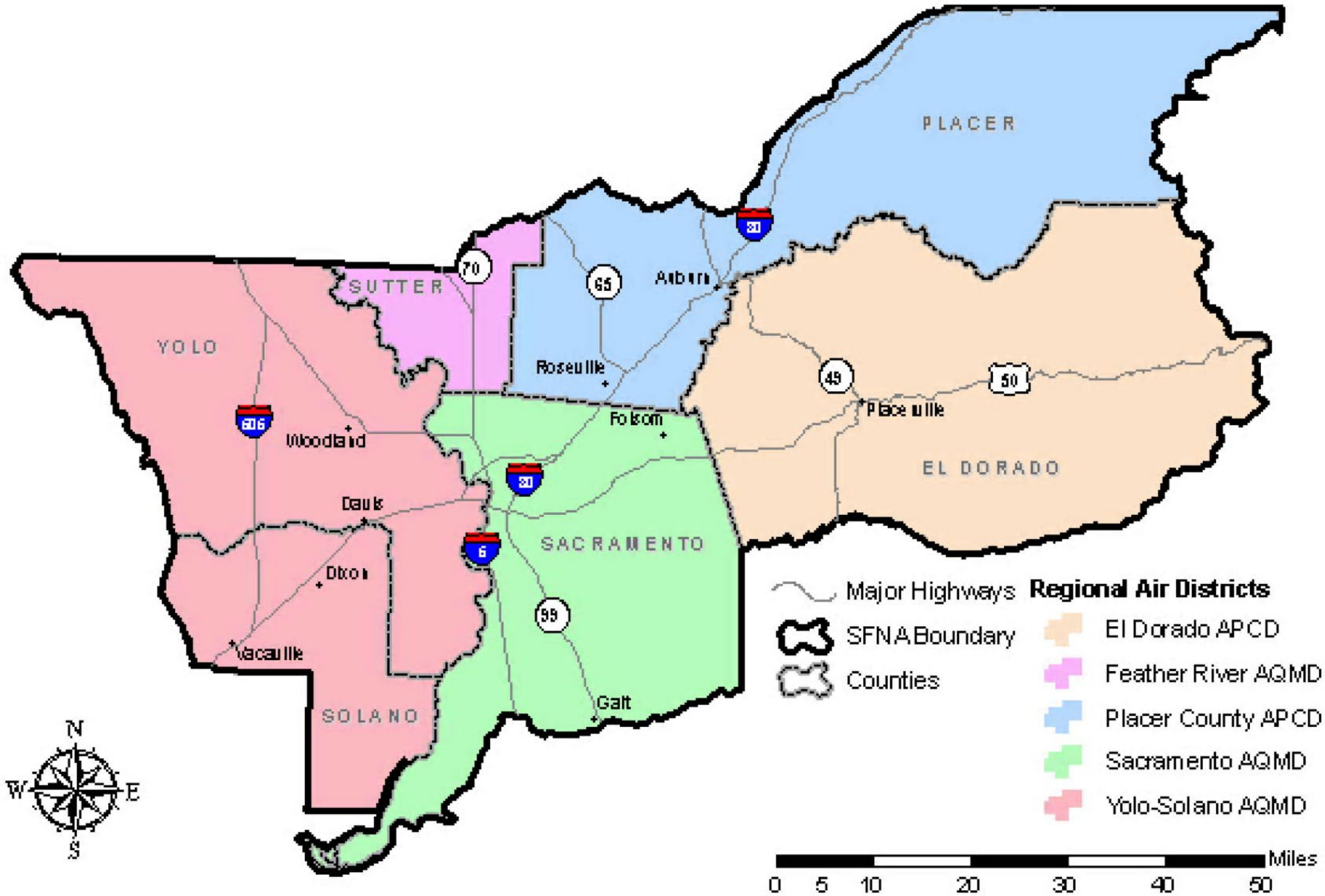
The Sacramento Federal Nonattainment Area for ozone (SFNA) is comprised of five air districts in the southern portion of the Sacramento air basin. The SFNA air districts include all of Sacramento and Yolo Counties, and portions of El Dorado, Placer, Sutter and Solano Counties (see Plate AQ-1). With the exception of ozone and particulate matter standards, this area is in attainment for all state and national ambient air quality standards (AAQS). However, the SFNA is designated a “severe” nonattainment area for the federal eight hour AAQS for ozone. As a part of the SFNA, Sacramento County is out of compliance with the state one hour and the federal eight hour AAQS for ozone.

With respect to particulate matter, Sacramento County is designated as nonattainment for the state PM_{10} 24 hour standard and annual mean, the state $PM_{2.5}$ annual standard and the federal $PM_{2.5}$ 24 hour standard.

Ambient air quality standards define clean air. Specifically, federal and state AAQS establish the concentration above which a pollutant is known to cause adverse health effects to sensitive groups within the population, such as children and the elderly. Because AAQS have been established for specific pollutants using health-based criteria, the pollutants for which standards have been set are known as “criteria” pollutants. For some of the criteria pollutants, the state standards are more stringent than the federal standards. The differences in the standards are due to variations in health studies and interpretations involved in the standard-setting process.

The amount of pollutants released and the atmosphere’s ability to transport and dilute the pollutants affect a given pollutant’s concentration in the atmosphere. Factors affecting transport and dilution include terrain, wind, atmospheric stability, and, for photochemical pollutants, sunlight. Sacramento’s poor air quality can largely be attributed to emissions, geography, and meteorology.

Plate AQ-1: Sacramento Federal Nonattainment Area (SNFA) for Ozone



Source: Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan, December 19, 2008 (revised in 2011, 2013 and 2017). The map in the adopted plan and the proposed revision are identical.

REGULATORY SETTING

POLLUTANTS AND AIR QUALITY STANDARDS

The criteria pollutants of greatest concern are due to construction activities and vehicle emissions. The pollutants from these activities are carbon monoxide (CO), ozone (O_3), and respirable particulate matter (PM_{10} and $PM_{2.5}$). A summary of state and federal ambient air quality standards for criteria pollutants is shown in Table AQ-1, below. Table AQ-2 shows the pollutants of concern within Sacramento County and their attainment status with state and federal standards.

CARBON MONOXIDE (CO)

State and Federal CO standards have been set for both 1-hour and 8-hour averaging times. The State 1-hour standard is 20 parts per million (ppm) by volume, while the Federal 1-hour standard is 35 ppm. Both State and Federal standards are 9 ppm for the 8-hour averaging period. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

PARTICULATE MATTER (PM_{10} & $PM_{2.5}$)

Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs, but the smaller particles have been shown to have the most serious health risks. Consequently, there are Federal and State air quality standards for particulate matter 10 microns or less in diameter (PM_{10}) and for particulate matter 2.5 microns or less in diameter ($PM_{2.5}$).

The State PM_{10} standards are 50 micrograms per cubic meter ($\mu g/m^3$) as a 24-hour average and 20 $\mu g/m^3$ as an annual arithmetic mean. The Federal PM_{10} standard is 150 $\mu g/m^3$ as a 24-hour average. The $PM_{2.5}$ standard has been set by the State at a concentration of 12 $\mu g/m^3$ as an annual arithmetic mean, and the Federal Standards are 12 $\mu g/m^3$ as an annual arithmetic mean and 35 $\mu g/m^3$ in a 24-hour period.

Particulate matter conditions in Sacramento County reflect a mix of rural and urban sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

OZONE (O_3)

Ozone is not usually emitted directly into the air, but is created at ground level by a chemical reaction between oxides of nitrogen (NO_X) and volatile organic compounds (VOC) in the presence of sunlight. The United States Environmental Protection Agency formerly called VOC reactive organic gases, or ROG – the latter term is still in use in most modeling programs and by the Sacramento Metropolitan Air Quality Management District. For this reason, both the term VOC and ROG may be used; the reader should be aware that these are the same constituents. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

State and federal standards for ozone have been set for an 8-hour averaging time, and the State also has set a standard for a 1-hour averaging time. There is a Federal 1-hour standard in existence, but the standard only applies to Early Action Compact Areas, and Sacramento County is not in such an area. The State 8-hour standard is 0.070 ppm (137 $\mu g/m^3$) and the 1-hour standard is 0.09 ppm (180 $\mu g/m^3$). The Federal 8-hour standard is 0.070 ppm (137 $\mu g/m^3$).

TOXIC AIR CONTAMINANTS

Concentrations of toxic air contaminants (TACs) are also used to indicate the quality of ambient air. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. Unlike criteria air pollutants, TACs are pollutants of local concern because they can present harmful effects when they are emitted in close proximity to sensitive receptors. Sensitive receptors are people, or facilities that generally house people (e.g., schools, hospitals, residences), that may experience adverse effects from unhealthful concentrations of air pollutants.

The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most prominent being diesel PM (ARB 2009). In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Naturally occurring asbestos (NOA) is also recognized by ARB as a TAC.

Table AQ-1: State and Federal Ambient Air Quality Standards

Pollutant	Symbol	Average Time	Standard, as parts per million		Standard, as micrograms per cubic meter		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	--	180	--	If exceeded	If exceeded more than 3 days in 3 years
		8 hours	0.070	0.070	137	--	If exceeded	If exceeded more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded more than 1 day per year
Nitrogen dioxide	NO_2	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded
		1 hour	0.18	0.100	339	188	If exceeded	
Sulfur dioxide	SO_2	24 hours	0.04	--	105	--	If exceeded	If exceeded more than 1 day per year
		3 hour	--	0.5	--	1,300	N/A	If exceeded more than 1 day per year
		1 hour	0.25	0.075	655	196	If exceeded	N/A
Hydrogen sulfide	H_2S	1 hour	0.03	--	42	--	If ≥	N/A
Vinyl chloride	C_2H_3Cl	24 hours	0.01	--	26	--	If ≥	N/A
Respirable particulate matter	PM_{10}	Annual arithmetic mean	--	--	20	--	If exceeded	N/A
		24 hours	--	--	50	150	If exceeded	If exceeded more than 1 day per year
Fine particulate matter	$PM_{2.5}$	Annual arithmetic mean	--	--	12	12	If exceeded	If exceeded over 3-year average
		24 hours	--	--	--	35	If exceeded	If exceeded over 3-year average
Sulfate particles	SO_4	24 hours	--	--	25	--	If ≥	N/A
Lead particles	Pb	Calendar Quarter	--	--	--	1.5	N/A	If exceeded more than 1 day per year
		Rolling 3-month average	--	--	--	0.15	If ≥	N/A
		30-day average	--	--	1.5	--	If ≥	N/A

Source: California Air Resources Board. "Ambient Air Quality Chart". May 4, 2016. Accessed: March 15, 2019. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf
NOTES: **1)** All standards are based on measurements at 25 C and 1 atmosphere pressure. **2)** National standards shown are the primary (health effects) standards. **3)** N/A = not applicable

Table AQ-2: Sacramento County Attainment Status

Pollutant	Attainment with State Standards	Attainment with Federal Standards
Ozone	Non-Attainment (1 hour Standard[1] and 8 hour Standard)	Attainment (1 hour Standard[2]) Non-Attainment, Classification = Severe -15* (8 hour[3] Standards)
Particulate Matter 10 Micron	Non-Attainment (24 hour Standard and Annual Mean)	Attainment (24 hour Standard)
Particulate Matter 2.5 Micron	Attainment (Annual Standard)	Non-Attainment (24 hour Standard) and Attainment (Annual)
Carbon Monoxide	Attainment (1 hour and 8 hour Standards)	Attainment (1 hour and 8 hour Standards)
Nitrogen Dioxide	Attainment (1 hour Standard and Annual)	Unclassified/Attainment (1 hour and Annual)
Sulfur Dioxide[4]	Attainment (1 hour and 24 hour Standards)	Attainment/Unclassifiable[5]
Lead	Attainment (30 Day Standard)	Attainment (3-month rolling average)
Visibility Reducing Particles	Unclassified	No Federal Standard
Sulfates	Attainment (24 hour Standard)	No Federal Standard
Hydrogen Sulfide	Unclassified (1 hour Standard)	No Federal Standard

1. Per Health and Safety Code (HSC) § 40921.59(c), the classification is based on 1989-1001 data, and therefore does not change.
2. Air Quality meets Federal 1-hour Ozone standard (77 FR 64036). EPA revoked this standard, but some associated requirements still apply. The SMAQMD attained the standard in 2009.
3. For both that 1997 and the 2008 Standard.
4. Cannot be classified.
5. Designation was made as part of EPA's designations for the 2010 SO_2 Primary National Ambient Air Quality Standard – Round 3 Designation in December 2017.

*Designations based on information from http://www.arb.ca.gov/desig/changes.htm#reports

Source: SMAQMD. "Air Quality Pollutants and Standards". Web. Accessed: March 15, 2019. http://airquality.org/air-quality-health/air-quality-pollutants-and-standards

Federal, State and Local Agencies

Air quality in Sacramento County is regulated by several agencies, which include the U.S. Environmental Protection Agency (EPA), California Air Resources Board (CARB), and Sacramento Metropolitan Air Quality Management District (SMAQMD). Each of these agencies develops rules and/or regulations to attain the goals or directives imposed upon them through legislation. Although EPA regulations may not be superseded, both State and Local regulations may be more stringent. In general, air quality is evaluated based upon standards developed by Federal and State agencies. Mobile sources of air pollutants are largely controlled by Federal and State agencies, while Local air pollution control districts or air quality management districts (AQMD) regulate stationary sources.

Air pollution problems in Sacramento County are primarily the result of locally generated emissions. However, Sacramento County has been identified as a source of ozone precursor emissions that occasionally contribute to air quality problems in the San Joaquin Valley Air Basin and the Northern Sacramento Valley Air Basin. Consequently, the air quality planning for Sacramento County must not only correct local air pollution problems but must also reduce the impacts from the area on downwind air basins.

Sacramento Metropolitan Air Quality Rules and Regulations

SMAQMD regulates air quality in Sacramento County through its permit authority over stationary sources of emissions, through its vehicle and fuels management program, and through planning and review activities. All projects are subject to SMAQMD Rules and Regulations in effect at the time of construction. Several SMAQMD Rules pertinent to the project are discussed below.

Rule 201: General Permit Requirements. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from SMAQMD prior to equipment operation. The applicant, developer or operator of a project that includes an emergency generator, boiler, or heater should contact the District early to determine if a permit is required, and to begin the permit application process. Portable construction equipment (e.g. generator, compressors, pile drives, lighting equipment, etc.) with an internal combustion engine over 50 horsepower are required to have a SMAQMD permit or a California Air Resources Board portable equipment registration.

Rule 403: Fugitive Dust. The developer or contractor is required to control dust emissions from earth moving activities or any other construction activity to prevent airborne dust from leaving the project site.

Rule 442: Architectural Coatings. The developer or contractor is required to use coatings that comply with the volatile organic compound content limits specified in the rule.

The SMAQMD was created by State law to enforce Local, State, and Federal air pollution regulations within the Sacramento Valley Air Basin. The SMAQMD's overall mission is to achieve clean air goals by leading the Sacramento region in protecting public health and the environment through effective programs, community involvement, and public education. The SMAQMD interacts with local, state, and federal government agencies, the business community, environmental groups, and private citizens to achieve these goals. The SMAQMD regulates air pollutant emissions from stationary sources through permit limitations and inspection programs and oversees compliance with state and federal mandates by adopting rules and regulations as necessary.

Because the Sacramento Valley Air Basin is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, the SMAQMD requires the implementation of the following Basic Construction Emission Control Practices (BCECPs), regardless of the project's significance determination under CEQA. Since these are already required by existing rules and regulations, it is not necessary to include them as mitigation.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to, soil piles, graded areas, unpaved parking areas, staging areas, and access roads;
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered;
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited;
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph);
- All roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used;
- Minimize idling time by either shutting equipment off when not in use or reducing time of idling to 5 minutes. Provide clear signage that posts this requirement for workers at the entrances to the site; and
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

Sacramento County

Local governments, such as Sacramento County, have the authority and responsibility to reduce air pollution through the land use decision-making authority allowed by their police power. Specifically, local governments are responsible for the mitigation of emissions resulting from land use decisions and for the implementation of transportation control measures as outlined in Federal, State and Local air quality attainment plans. In general, a first step toward implementation of a local government's responsibility is accomplished by identifying air quality goals, policies, and implementation measures in the agency's General Plan. Through capital improvement programs, local governments can fund infrastructure that contributes to improved air quality, by requiring such improvements as bus turnouts, energy-efficient street lights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, local governments assess air quality impacts, require mitigation of potential air quality impacts by conditioning discretionary permits, and monitor and enforce implementation of such mitigation.

The Sacramento County General Plan includes the following policies that pertain to air quality for the proposed project:

AQ-3. Buffers and/or other appropriate mitigation shall be established on a project-by-project basis and incorporated during review to provide for protection of sensitive receptors from sources of air pollution or odor. The California Air Resources Board's "Air Quality and Land Use Handbook: A Community Health Perspective", and the AQMD's approved Protocol (Protocol for Evaluating the Location of Sensitive Land uses Adjacent to Major Roadways) shall be utilized when establishing these buffers.

AQ-4. Developments which meet or exceed thresholds of significance for ozone precursor pollutants as adopted by the Sacramento Metropolitan Air Quality Management District (SMAQMD), shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation as to technical adequacy by the Sacramento Metropolitan Air Quality Management District.

AQ-10. Encourage vehicle trip reduction and improved air quality by requiring development projects that exceed the SMAQMD's significance thresholds for operational emissions to provide on-going, cost-effective mechanisms for transportation services that help reduce the demand for existing roadway infrastructure.

AQ-16. Prohibit the idling of on-and off-road engines when the vehicle is not moving or when the off-road equipment is not performing work for a period of time greater than five minutes in any one-hour period.

AQ-17. Promote optimal air quality benefits through energy conservation measures in new development.

AQ-19. Require all feasible reductions in emissions for the operation of construction vehicles and equipment on major land development and roadway construction projects.

AQ-21. Support SMAQMD's particulate matter control measures for residential wood burning and fugitive dust.

METHODOLOGY

The SMAQMD "Guide to Air Quality Assessment in Sacramento County" (December 2009, as amended, hereinafter called the SMAQMD Guide) contains screening thresholds for significant impacts. The California Emissions Estimator Model (CalEEMod) version 2016.3.2, a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions including greenhouse gas emissions from land use projects, was used to quantify the construction and operation emissions of the proposed cargo facility (reference Appendix AQ-1, Air Quality Assessment AMF Cargo Facility Project and Master Plan Update. Prepared by Kimley-Horn and Associates, Inc. January 2021).

The other proposed changes to the Master Plan facilities including the new Concourse C (PAL 2), consolidated car rental facility (PAL 2) and commercial development areas (PAL 3) are evaluated using CalEEMod defaults for land use types and square footage to provide an estimate for potential air quality impacts.

CONSTRUCTION IMPACT METHODOLOGY

Construction air quality modeling requires detailed information about the exact amount of acreage of construction involved, the amount of pavement, and the number and type of construction equipment.

CalEEMod version 2016.3.2 was used to calculate the emissions generated during the construction of the proposed cargo facility, concourse, consolidated rental car facility and commercial development area. The building square footage and modifications to the construction schedule were entered into the model. Model results are then compared with the significance thresholds of 80 lbs/day (14.6 tons/year) for PM_{10}, 82 lbs/day (15 tons/year) for $PM_{2.5}$ and 85 lbs/day for NO_x.

OPERATIONAL IMPACT METHODOLOGY

For this analysis, operational impacts include emissions associated with ozone precursors (NO_x and Reactive Organic Gases (ROG)) and fugitive dust (PM_{10} and $PM_{2.5}$). Most ozone precursor emissions result from mobile and area sources. Mobile sources include motor vehicle traffic, while area sources include pollutants generated from furnaces, water heaters/boilers, facility maintenance equipment, and consumer products.

CalEEMod version 2016.3.2 was used to calculate the emissions generated during the operation of the proposed cargo facility. Specific vehicle trip information based on the traffic analysis prepared by Kimley-Horn was entered into the model. Similarly, the proposed Concourse C, consolidated rental car facility and commercial development areas identified in PALs 2 and 3 are evaluated using CalEEMod defaults since specific building and use information is not known at this time. Model results are then compared with the significance thresholds of 80 lbs/day (14.6 tons/year) for PM_{10}, 82 lbs/day (15 tons/year) for $PM_{2.5}$ and 65 lbs/day for NO_x. and ROG. The full list of the assumptions, calculations, and data is provided in Appendix AQ-1.

SIGNIFICANCE CRITERIA

According to the CEQA Appendix G criteria a project may be deemed to have a significant effect on the environment if it:

1. Conflict with or obstruct implementation of the applicable air quality plan;

2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment;

3. Expose sensitive receptors to substantial pollutant concentrations; or,

4. Result in other emissions (e.g. odors) adversely affecting a substantial number of people.

SMAQMD has adopted significance thresholds for CEQA projects within the District. The adopted significance thresholds for criteria pollutants of the greatest concern in the Sacramento area are shown, below, in Table AQ-3:

Table AQ-3: SMAQMD Significance Thresholds

	ROG[1] (lbs/day)	NO_x (lbs/day)	CO ($\mu g/m^3$)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Construction (short-term)	None	85	CAAQS[2]	80[3]	82[3]
Operational (long-term)	65	65	CAAQS	80[3]	82[3]

1. Reactive Organic Gas
2. California Ambient Air Quality Standards (see Table AQ-4).
3. Only applies to projects for which all feasible best available control technology (BACT) and best management practices (BMPs) have been applied. Projects that fail to apply all feasible BACT/BMPs must meet a significance threshold of 0 lbs/day.
4. Annual Thresholds are determined for PM_{10} and $PM_{2.5}$, 14.6 tons/year and 15 tons/year, for both construction and operational.

Short-term impacts are associated with project construction, and long-term impacts are associated with mobile and area emissions during operation of a completed project. The analyses below focus on ozone precursors and particulate matter (ROG, NO_x, PM_{10} and $PM_{2.5}$), which is consistent with the SMAQMD Guidelines. Analyses are not included for sulfur dioxide, lead, and other constituents because there are no mass emission thresholds; these are concentration-based limits in the AAQS, which require substantial, point-source emissions before exceedance will occur. The project does not include any elements that will generate substantial point-source emissions. More specifically:

a. Page 3-1 of the SMAQMD Guide states that for construction activities, carbon monoxide, sulfur dioxide, and lead are of less concern because construction activities are not likely to generate substantial quantities of these criteria air pollutants (CAPs).

b. Page 4-1 of the SMAQMD Guide states that for most land use projects pollutants such as sulfur dioxide and lead are of less concern because operational activities are not likely to generate substantial quantities of these CAPs and the Sacramento Valley Air basin has been in attainment for these CAPs for multiple years.

c. Page 4-7 of the SMAQMD Guide states that except for carbon monoxide, land use development projects do not typically have the potential to result in localized concentrations of CAPs that exceed or contribute to an exceedance of the respective AAQS.

Table AQ-4: CAAQS Thresholds

Pollutant	Concentration Thresholds
PM_{10}	50 µg/m^3 24-hour standard; 20 µg/m^3 Annual Arithmetic Mean
$PM_{2.5}$	12 µg/m^3 Annual Arithmetic Mean
CO	20 ppm 1- hour standard; 9 ppm 8- hour standard
NO_2	0.18 ppm 1- hour standard; 0.03 ppm Annual Arithmetic Mean
SO_2	0.25 ppm 1- hour standard; 0.04 ppm 24- hour standard
Lead	1.5 µg/m^3 30-day average
Visibility-Reducing Particles	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent
Sulfates	25 µg/m^3 24-hour standard
H_2S	42 µg/m^3 or 0.03 ppm 1-hour standard
Vinyl Chloride	26 µg/m^3 or 0.01 ppm 24-hour standard

IMPACTS AND ANALYSIS

In the following section, impacts of the proposed project related to air quality are discussed. As provided above, these determinations are based on the criteria identified by the SMAQMD and the air quality analysis provided in Appendix AQ-1. The results of air quality modeling are described, and a determination of significance is made.

IMPACT: CONFLICT WITH OR OBSTRUCT THE IMPLEMENTATION OF APPLICABLE AIR QUALITY PLAN

GENERAL CONFORMITY

General Conformity requirements only apply to federally designated maintenance and nonattainment areas. The proposed project is located in an area federally designated as severe nonattainment for the 8-hour ozone standard and **a moderate non-attainment area for** the 24-hour $PM_{2.5}$ standard. **The Sacramento area is also in attainment-maintenance for PM_{10}.** The applicable General Conformity *de minimis* threshold values are 25 tons per year for NO_x and ROG, and ~~70~~**100** tons per year for $PM_{2.5}$ **and PM_{10}**.

The prior EIR determined that buildout of Phase 1 and 2 of the SMF Master Plan conforms with the applicable SIP. The proposed project will accommodate growth over the next 20 years; however, this growth would not substantially increase the number of aircraft operations as projected in the prior document. The aviation emissions of the proposed project are included in the Sacramento Regional Ozone SIP for the 2015 Ozone Standard and the Second 10-year PM_{10} Maintenance Plan. SMAQMD is coordinating with the SCDA to provide emissions estimates from the proposed project for inclusion in future SIPs.

According to Federal Aviation Administration (FAA) regulations (40 CFR 93.153(c)(xii)) and 1050.1F Desk Reference, airport master plans are not approved by the FAA and therefore, are not required to complete a General Conformity determination. Individual projects or elements under the Master Plan which meet the specific review requirements of FAA Guidance Section 163, will go through project specific Conformity Determination under the National Environmental Policy Act (NEPA) at the time federal funding or approval is requested. Even though General Conformity is not required for the proposed Master Plan Update, project specific analysis has been provided to demonstrate if individual projects or elements under the Master Plan Update would exceed federal thresholds for General Conformity.

Changes from the prior EIR analysis include the proposed cargo facility, new Concourse C, consolidated rental car facility, and the proposed commercial development area. The construction and operational emissions are provided in Table AQ-5 and Table AQ-7 for the proposed cargo facility **(PAL 1)**. The estimated construction and operational emissions are provided in Table AQ-6 and Table AQ-8 for the **other** new Master Plan Update projects **(PALs 2 and 3)**. Construction emissions that exceed **the local air quality management district** thresholds would be mitigated through payment of in-lieu fees. The mitigated project**s, or elements under the proposed Master Plan Update,** will not exceed ~~General Conformity~~ **Federal thresholds for NO_x, $PM_{2.5}$ or PM_{10},** and therefore, no further General Conformity review is necessary.

The emissions from the proposed project will be incorporated into future SIPs for the Sacramento Region to ensure regional emissions do not cause or contribute to new violations of NAAQS, do not worsen existing violations of the NAAQS, and/or delay attainment of the NAAQS. No further conformity determination is required and impacts are ***less than significant***.

MITIGATION MEASURES

None recommended.

IMPACT: CONSTRUCTION EMISSIONS – INCREASE OF ANY CRITERIA POLLUTANT FOR WHICH THE PROJECT REGION IS IN NON-ATTAINMENT

Construction activities require the use of various combinations and types of construction equipment. Much of this equipment is likely to be diesel-fueled and would emit NO_x and particulate matter as part of the fuel combustion process. In addition, the disturbance of paved surfaces and soils produces fugitive dust.

PROPOSED CARGO FACILITY

The project was entered in to CalEEMod with project specifics and an assumption of construction activities lasting approximately 16 months. All other program defaults were assumed. In addition, it is assumed that a concrete batch plant will be set up on-site. The primary emissions associated with concrete batch plants are particulate matter which escapes during loading of raw material and mixing. Modeling results are presented in Table AQ-5 below. Considering that the proposed cargo facility is one of many proposed projects in the Master Plan Update, there is a possibility of multiple projects occurring at one time. In order to further reduce construction related emissions, the previously adopted Mitigation Measures AQ-1 and AQ-2 (combined and renumber to AQ-1 in this document) and AQ 5 (renumbered to AQ-3 in this document) are still applicable to ensure compliance with existing SMAQMD rules and Best Management Practices to control fugitive dust and equipment emissions. AQ-1 has been updated to reflect current mitigation language provided by SMAQMD. Construction of the proposed cargo facility will not exceed thresholds and impacts are ***less than significant with mitigation.***

PROPOSED MASTER PLAN UPDATE PROJECTS

Master Plan projects not previously analyzed include the new Concourse C, consolidated rental car facility and the commercial development areas. These projects are identified in PALs 2 and 3 and therefore, project specific information is not known. However, estimates of project building size, footprints, and acreage has been assigned for the proposed projects and entered into CalEEMod to determine approximate emissions associated with these projects. While the construction of the Master Plan Update projects would be built over the long-term planning horizon, the projects were entered into the model with nearest construction date and assumes all projects are built at the same time. Model defaults were used for all other project unknowns. Modeling results are provided in Table AQ-6 below.

Table AQ-5: Summary of Mitigated Construction Emissions for the Cargo Facility

Construction Year	Estimated Emissions (Pounds per day)				Estimated Emissions (Tons per year)			
	NO_x	ROG	PM_{10}	$PM_{2.5}$	NO_x	ROG	PM_{10}	$PM_{2.5}$
2021	77.70	9.32	14.29	5.79	3.37	0.33	0.48	0.27
2022	72.63	110.61	14.12	4.53	4.55	4.79	0.59	0.27
Concrete Batch Plant	0	0	16.34	15.15	0	0	0.72	0.67
Maximum (including Concrete Batch Plant)	77.70	110.61	30.63	20.94	4.45	5.28	1.73	1.15
Threshold	85	N/A	80	82	Federal 25	Federal 25	Federal ~~N/A~~**100** SMAQMD 14.6	Federal 100 SMAQMD 15
Exceed Threshold?	**No**	**--**	**No**	**No**	**No**	**No**	**No**	**No**
Information from Table 12 of the Air Quality Analysis Appendix AQ-1.								

Table AQ-6: Summary of Mitigated Construction Emissions for Master Plan Update

Construction Year		Estimated Emissions (Pounds per day)			Estimated Emissions (Tons per year)			
	NO_x	ROG	PM_{10}	$PM_{2.5}$	NO_x	ROG	PM_{10}	$PM_{2.5}$
2021	131.81	15.87	26.08	8.05	4.75	0.49	0.80	0.36
2022	126.46	622.13	29.75	8.98	13.65	21.21	2.85	0.88
Threshold	85	N/A	80	82	~~Federal 25~~**N/A**	~~Federal 25~~**N/A**	Federal N/A SMAQMD 14.6	Federal ~~100~~**N/A** SMAQMD 15
Exceed Threshold?	**Yes**	**--**	**No**	**No**	**N/A~~o~~**	**N/A~~o~~**	**No**	**No**
Information from Table 14 of the Air Quality Analysis, Appendix AQ-1.								

As seen above, construction of Master Plan projects together would exceed SMAQMD thresholds for NO_x. These emissions represent a worst case scenario of simultaneous project construction that could, but is unlikely, to occur during each PAL of the Master Plan Update. Consistent with the proposed cargo facility analysis above, all construction projects would be required to apply mitigation measures AQ-1 and 3 to further reduce construction emissions. Further, if an individual project is shown to exceed construction thresholds, the project will be required to implement prior mitigation measure AQ-4 (revised and renumbered to AQ-2 in this document) in addition to prior mitigation measures AQ-1 and 2(combined and revised) and AQ-5 (renumbered to AQ-3 in this document). Pursuant to mitigation measure AQ-2, if the project remains above the threshold, the project will be required to pay construction mitigation fee determined by the SMAQMD at the prevailing rate (currently $30,000 per ton of emission plus a one-time administrative fee of 5%). Implementation of revised existing mitigation measures will ensure that construction impacts are ***less than significant with mitigation***.

MITIGATION MEASURES:

AQ-1 (Prior EIR Mitigation Measure AQ-1 and 2 Revised) All future construction projects which exceed the SMAQMD construction ozone precursor screening thresholds in effect at the time of project submittal shall include an ozone precursor analysis. If the analysis results indicate that the project will generate ozone precursors that exceed the current Sacramento Metropolitan Air Quality Management District thresholds, this mitigation shall apply. This mitigation may be modified if guidance from the Sacramento Metropolitan Air Quality Management District changes in the future.

a. The project applicant, or its designee, shall provide a plan for approval by the Sac Metro Air District that demonstrates the heavy-duty off-road vehicles (50 horsepower or more) to be used 8 hours or more during the construction project will achieve a project wide fleet-average 10% NOx reduction compared to the most recent California Air Resources Board (CARB) fleet average. The plan shall have two components: an initial report submitted before construction and a final report submitted at the completion. (Acceptable options for reducing emissions may include use of cleaner engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.)

b. Submit the initial report at least four (4) business days prior to construction activity using the Sac Metro Air District's Construction Mitigation Tool (http://www.airquality.org/businesses/ceqa-land-use-planning/mitigation).

c. Provide project information and construction company information.

d. Include the equipment type, horsepower rating, engine model year, projected hours of use, and the CARB equipment identification number for each piece of equipment in the plan. Incorporate all owned, leased and subcontracted equipment to be used.

e. Submit the final report at the end of the job, phase, or calendar year, as pre-arranged with Sac Metro Air District staff and documented in the approval letter, to demonstrate continued project compliance.

The SMAQMD may conduct periodic site inspections to determine compliance. Nothing in this mitigation shall supersede other air district, state or federal rules or regulations.

This mitigation will sunset on January 1, 2028, when full implementation of the CARB In Use Off-Road Regulation is expected.

AQ-2 (Prior EIR Mitigation Measure AQ-4 Revised)To mitigate the additional construction emissions that cannot be offset through implementation of Mitigation Measure AQ-1, above, the following shall apply: Prior to construction activities, SCDA or the project proponent will submit proof that the off-site air quality mitigation fee has been paid to SMAQMD, and that the construction air quality mitigation plan has been approved by SMAQMD and the Environmental Coordinator. The fee will be calculated based on the most current SMAQMD recommended methodology and fee rate available at the time of ground disturbance.

AQ-3 (Prior EIR Mitigation Measure AQ-5 Revised) The following mitigation measures will be incorporated into the project to minimize the generation of PM_{10} dust during dry construction conditions:

a. Enclose, cover, or water twice daily all soil piles.

b. Water exposed soil with adequate frequency for continued moist soil.

c. Water all haul roads twice daily.

d. Cover loads of all haul/dump truck securely.

IMPACT: OPERATIONAL EMISSIONS – INCREASE OF ANY CRITERIA POLLUTANT FOR WHICH THE PROJECT REGION IS NON-ATTAINMENT

Once project construction is completed, additional pollutants are emitted through the use or operation of the site. Long-term emissions of ozone precursors (ROG and NO_x), particulate matter (PM_{10} and $PM_{2.5}$) and carbon monoxide (CO) generated by the project are associated with the operation of the buildings (energy), mobile sources (tailpipe emissions) and area sources (architectural coatings, new landscaping).

PROPOSED CARGO FACILITY

The operational emissions associated with the proposed cargo facility are largely due to the mobile emissions associated with employee trips and truck trips. Table AQ-7, below, identifies the estimated emissions. The proposed cargo facility will exceed the daily thresholds for NO_x and ROG and both the daily and annual thresholds for particulate matter (PM_{10}). These emissions are largely from mobile source emissions. **Consistent with General Plan Policy AQ-4 and AQ-10, the SCDA will be required to prepare an Air Quality Mitigation Plan (AQMP) and a Transportation Demand Management program (TDM) to reduce operational emissions. The AQMP may include measures of the TDM plan and shall obtain a percent value of 15 or more. The AQMP and TDM will be reviewed and endorsed by the SMAQMD and approved by the County Planning and Environmental Review prior to the occupancy of the first project under the Master Plan Update.** **An** ~~A~~**a**dditional mitigation measure~~s~~ ~~are~~ **is** recommended to further reduce this impact. Th~~ese~~**is** measure~~s~~ consist**s** of upgrading trucks to newer engine models **and electrified docks and infrastructure for electric truck charging stations.**~~, and~~ **The project proponent shall participate in the County TDM program**~~ establishing a Transportation Demand Management program for new employers/employees to~~ **which may include** establishing a new, or join**ing** an existing, local Transportation Management Association. However, the impact cannot be reduced to less than significant and operational impacts associated with the proposed cargo facility are ***significant and unavoidable***.

MASTER PLAN UPDATE

Operational emissions were estimated for projects beyond the scope of the 2007 EIR to determine if the proposed project would result in a potentially significant impact. The majority of operational emissions are from mobile sources, (employee trips) with a smaller amount from area sources (building operation). The assumptions used in this analysis include: operational by 2022, no natural gas, and mitigation applied for transportation management demand, EV infrastructure, reduce water usage, exceedance of Title 24 and low VOC paints and cleaners. The operational emissions estimate is detailed in Table AQ-8, below. Generally, projects within the Master Plan Update will become operational over the planning horizon of the Master Plan. It is possible that individual projects and facilities will not exceed operational emission thresholds determined by the SMAQMD; however, as shown in the analysis here, the eventual construction of all Master Plan projects will result in significant operational emissions for NO_x and ROG. Implementation of Mitigation Measures AQ-4 through AQ-7 are required for all projects and will further reduce operational impacts, but not to a less than significant level, and impacts are ***significant and unavoidable***.

SMF MASTER PLAN UPDATE MOBILE SOURCE EMISSIONS ASSOCIATED WITH VEHICLE MILES TRAVELED (VMT)

The Master Plan Update continues to involve expansion to accommodate growth over the next 20 years. The proposed expansion would serve unmet local demand, meaning that passengers whom traveled to the Bay Area to meet their domestic travel needs will be able to stay local. Therefore, the total trip length decreases, but the decrease is only applicable to the Yolo-Solano Air District; other air districts will see a nominal increase in VMT. Emissions associated with the increase in VMT are presented in Table AQ-9, below. The emission thresholds employed by the SMAQMD and other air districts in the

SACOG region (i.e., Yolo-Solano AQMD, Feather River AQMD, Placer County APCD, and El Dorado County AQMD) would not be exceeded with implementation of the Master Plan Update and impacts are ***less than significant***.

Table AQ-7: Summary of Operational Emissions for the Cargo Facility

Total Emissions	Estimated Emissions (Pounds per day)					Estimated Emissions (Tons per year)				
	NO_x	ROG	CO	PM_{10}	$PM_{2.5}$	NO_x	ROG	CO	PM_{10}	$PM_{2.5}$
Area Source	0	23.80		0	0	0	4.34	0.01	0	0
Energy	0	0		0	0	0	0	0	0	0
Mobile	121.02	62.59	459.88	117.92	32.04	21.03	7.75	72.29	20.73	5.65
Total Unmitigated	121.02	86.39	459.88	117.92	32.04	21.03	12.09	72.3	20.73	5.65
Area Source	0	23.80	0.10	0	0	0	4.34	0.01	0	0
Energy	0	0	0	0	0	0	0	0	0	0
Mobile	120.19	62.47	455.62	116.60	31.68	20.89	7.73	71.65	20.5	5.59
Total Mitigated	120.19	86.27	455.62	116.60	31.68	20.89	12.07	71.67	20.5	5.59
Threshold	65	65	N/A	80	82	Federal 25	Federal 25	N/A	Federal ~~N/A~~**100** SMAQMD 14.6	Federal 100 SMAQMD 15
Exceed Threshold?	**Yes**	**Yes**	**--**	**Yes**	**No**	**No**	**No**	**--**	**Yes** **(SMAQMD)**	**No**
	Information from Table 12 of the Air Quality Assessment Appendix AQ-1.									

Table AQ-8: Summary of Operational Emissions for the Master Plan Update

Total Emissions	Estimated Emissions (Pounds per day)					Estimated Emissions (Tons per year)				
	NO_x	ROG	CO	PM_{10}	$PM_{2.5}$	NO_x	ROG	CO	PM_{10}	$PM_{2.5}$
Area Source	0.01	101.00	0.66	0	0	0	18.43	0.82	0	0
Energy	0	0		0	0	0	0	0	0	0
Mobile	110.71	43.42	334.72	71.05	19.52	16.68	8.34	50.34	10.98	3.03
Total Unmitigated	110.72	144.42	335.38	71.05	19.52	16.68	26.77	51.16	10.98	3.03
Area Source	0.01	84.62	0.66	0	0	~~15.44~~**0**	~~0~~**15.44**	0.08	0	0
Energy	0	0	0	0	0	0	0	0	0	0
Mobile	109.92	43.31	331.63	69.93	19.22	~~8.32~~**16.56**	~~16.56~~**8.32**	49.84	10.81	2.98
Total Mitigated	109.93	127.93	332.29	69.93	19.22	~~23.76~~**16.56**	~~16.56~~**23.76**	49.92	10.81	2.98
Threshold	65	65	N/A	80	82	~~Federal 25~~**N/A**	~~Federal 25~~**N/A**	N/A	Federal N/A SMAQMD 14.6	Federal ~~100~~**N/A** SMAQMD 15
Exceed Threshold?	**Yes**	**Yes**	**--**	**No**	**No**	**N/A~~o~~**	~~**Yes**~~ **N/A**[1]	**--**	**No**	**No**
	1. The project exceeds thresholds unmitigated. Mitigation does reduce to below thresholds. Information from Table 15 of the Air Quality Assessment Appendix AQ-1.									

Table AQ-9: SMF Master Plan Update Mobile Source Emissions Associated with VMT

Air District	Net Emissions			
	NO_x	ROG	PM_{10}	$PM_{2.5}$
SMAQMD	0.12 lbs/day	0.07 lbs/day	0.00 lbs/day	0.00 lbs/day
Threshold	65 lbs/day	65 lbs/day	80 lbs/day	82 lbs/day
Exceed Threshold	**No**	**No**	**No**	**No**
Yolo-Solano AQMD	-0.58 tons/year	-0.36 tons/year	-0.01 tons/year	-0.01 tons/year
Threshold	10 tons/year	10 tons/year	80lbs/day	N/A
Exceed Thresholds?	**No**	**No**	**No**	**No**
Feather River AQMD	0.57 lbs/day	0.24 lbs/day	0.01 lbs/day	0.01 lbs/day
Thresholds	25	25	80	N/A
Exceed Thresholds?	**No**	**No**	**No**	**No**
Placer County APCD	0.26 lbs/day	0.14 lbs/day	0.01 lbs/day	0.01 lbs/day
Thresholds	55 lbs/day	55 lbs/day	82 lbs/day	82 lbs/day
Exceed Thresholds?	**No**	**No**	**No**	**No**
El Dorado County AQMD	0.04 lbs/day	0.02 lbs/day	0.00 lbs/day	0.00 lbs/day
Thresholds	82 lbs/day	82 lbs/day	N/A	N/A
Exceed Thresholds?	**No**	**No**	**No**	**No**

Emission were calculated using EMFAC2017 emissions rates and VMT data for each air district in the SACOG region. This VMT data differs slightly from that in the Traffic Impact Study (Kimley-Horn, July 2020) and was used for analytical purposes only. Source Table 13 of Appendix AQ-1.

MITIGATION MEASURES:

AQ-4 All projects which include loading docks, including the proposed cargo facility, shall ensure, through sale or leasing agreements, that the haul fleet consist of trucks that at a minimum meet the emissions standards of a 2010 vehicle model, and as trucks are replaced they are replaced with the newest available model. **Annual reporting shall be provided to the Sacramento County Department of Airports. To ensure compliance of hired third-party fleets serving the facility, it is recommended that a Truck and Bus CARB Certificate is verified for each fleet.** In addition, the project shall include electrical hookups at all loading bays, and electric vehicle charging stations and/or infrastructure (e.g., conduit and panel space) to support future installation of truck charging stations for future zero-emission heavy-duty vehicles.

AQ-5 **An Air Quality Mitigation Plan (AQMP) obtaining 15 percent or more reduction in mobile source ozone precursors shall be prepared by the Sacramento County Department of Airports. The AQMP shall be reviewed by the SMAQMD and approved by the Environmental Coordinator prior to issuance of occupancy permits of the first project or element under the Master Plan Update.** ~~For the proposed cargo facility and other projects which exceed the SMAQMD operational screening levels, prior to issuance of occupancy permits, project operator(s) shall prepare and submit a Transportation Demand Management (TDM) program detailing strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips by walking, bicycle, carpool, vanpool, and transit. The TDM program shall include, but is not limited to, the following:~~

~~a. Provide transportation information center and on-site TDM coordinator to educate employers, employees, and visitors of surrounding transportation options;~~

~~b. Promote bicycling and walking through design features, such as showers for employees, self-service bicycle repair area, etc. around the project site;~~

~~c. Promote and support carpool/vanpool/rideshare use through parking incentives and administrative support, such as ride-matching service; and~~

d. ~~Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated parking spaces for carpool/vanpool users~~.

AQ-6 ~~The proposed cargo facility and other projects which exceed the SMAQMD operational screening levels, shall establish a new, or join and maintain membership in an existing Transportation Management Association.~~ **A Transportation Demand Management Program (TDM) shall be prepared by Sacramento County Department of Airports. The TDM shall be**

reviewed by the SMAQMD and approved by the Environmental Coordinator prior to issuance of occupancy permits of the first project or element under the Master Plan Update. The TDM program must detail strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips through alternative forms of transportation which may include: walking (internal to SMF), bicycling, carpool and transit. The TDM program shall include, but is not limited to, the following:

a. **Provide transportation information center and on-site TDM coordinator/program manager to educate employers, employees, and visitors of surrounding transportation options and ensure implementation;**

b. **Ensure that there is a permanent funding mechanism to support the program (CSD-1 or similar).**

c. **Promote bicycling and/or walking through design features. Examples may include showers for employees, self-service bicycle repair area, etc. around the project site or other methods.**

d. **Promote and support carpool use through parking incentives and administrative support. Examples may include ride-matching service or other methods.**

e. **Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated parking spaces for carpool users.**

f. **TDM coordinator/program manager is responsible for preparing an annual report to the Environmental Coordinator.**

AQ-7 Future development projects under the Airport Master Plan Update shall use low VOC content paints that exceed the regulatory VOC limits put forth by SMAQMD's Rule 442. Low VOC paints shall be no more than 10 grams per liter (g/L) of VOC. Alternatively, ~~the~~ pre-painted material that do not require the use of architectural coating may be utilized. **The contractor shall submit to the Sacramento County Department of Airports a schedule of all paint to be used to demonstrate compliance with this measure. Sacramento County Department of Airports shall communicate annually with facilities management and tenants regarding this requirement beyond the initial application of coatings.**

IMPACT: MOBILE SOURCE CO EMISSIONS

The 2007 EIR previously analyzed the maximum CO concentrations at intersections in the airport's vicinity that would result from increased traffic from buildout of the Master Plan. The analysis looked at the following intersections: Airport Boulevard/I-5, Elkhorn

Boulevard/State Route 99 and Elverta Road/State Route 99. The analysis determined that when combined with background CO concentrations, the Master Plan would not be expected to exceed the Federal or State standards.

Potential impacts associated with the Master Plan Update are analyzed consistent with current guidelines. The SMAQMD CEQA Guide provides a preliminary screening methodology to determine whether project related vehicle trips will result in CO emissions that contribute to an exceedance of the threshold of significance. The screening criteria is divided into two tiers to help discern if project-specific CO dispersion modeling is required. The SMAQMD CEQA Guide includes the following guidance:

> The proposed project will result in a less-than-significant impact to air quality for local CO if:
>
> - Traffic generated by the proposed project will not result in deterioration of intersection level of service (LOS) to LOS E or F; and
>
> - The project will not contribute additional traffic to an intersection that already operates at LOS of E or F.

The Master Plan Update would not satisfy this first tier of screening criteria. As identified in the project VMT Assessment and Local Access, Safety, and Circulation Study prepared by Kimley Horn (Appendix TC-1), there are several intersections that would be affected by the Master Plan Update such that the project would contribute additional traffic to some intersections that already operate at LOS of E or F. Therefore, the project would not satisfy the first tier of the SMAQMD's recommended screening criteria.

The SMAQMD guidance states that, if the first tier of screening criteria is not met, then a second tier of screening criteria shall be examined. The second tier of screening criteria is listed below. According to the SMAQMD, the project would result in a less than significant impact to air quality for local CO if all of the following criteria are met:

- The project will not result in an affected intersection experiencing more than 31,600 vehicles per hour;

- The project will not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway; or other locations where horizontal or vertical mixing of air will be substantially limited; and

- The mix of vehicle types at the intersection is not anticipated to be substantially different from the County average (as identified by the EMFAC or CalEEMod models).

The Master Plan Update meets each of these three criteria. The project does not result in an affected intersection experiencing more than 31,600 vehicles per hour, would not contribute traffic at a location where horizontal or vertical mixing of air will be substantially limited, and the mix of vehicles types at the intersection would not be substantially different than the County average.

Therefore, project related mobile source CO concentrations do not exceed SMAQMD thresholds and ***will not be considered cumulatively considerable***.

MITIGATION MEASURES

None recommended.

IMPACT: EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS

Existing airport operations include aircraft emissions, mobile emissions, landscape maintenance, and building emissions which generate Toxic Air Contaminants (TACs) including total organic gases and $PM_{2.5}$. These emissions are part of the CEQA baseline and Master Plan elements considered in the prior EIR were analyzed for impacts associated with TACs. The conclusions of the prior EIR found that the Master Plan would result in less than significant impacts related to TACs.

The proposed Master Plan Update projects will emit TACs including total organic gases (TOG) associated with building construction and operation, and $PM_{2.5}$ associated with construction equipment and diesel engine trucks. The exposure of sensitive receptors (e.g., existing and future offsite residents) to TACs from project-generated construction and operational sources are discussed below. The following discussion focuses on Diesel Particulate Matter, the TAC with the greatest health effects according to the SMAQMD Guide.

DIESEL PARTICULATE MATTER

The ~~only~~ **greatest** ~~Toxic Air Containments (~~TAC~~)~~ emitted from the project would be Diesel Particulate Matter (DPM). When evaluating whether a project has the potential to result in localized impacts, one must consider:

- The nature of the air pollutant emissions;
- The proximity between the emitting facility and sensitive receptors;
- The direction of prevailing winds; and,
- Local topography.

The proposed project will consists of construction of multiple airport related facilities and development over the life of the Master Plan. The airport is located in the Sacramento Valley that generally has prevailing winds from the southwest with occasional winds from the north. The nearest single-family receptor is approximately a half-mile west of the SMF. The nearest sensitive receptor (i.e., school, nursing home, daycare, hospital) is approximately three miles to the east. Considering distances to nearest receptors and prevailing wind direction, construction-related diesel particulate matter would not result in significant TACs for nearby sensitive receptors.

The proposed cargo facility, will have loading docks to accommodate up to 100 trucks. This type of facility, if placed near sensitive receptors, would need to have a health risk assessment completed to determine if the sensitive receptors would be exposed to TACs in higher concentrations then allowed. The proposed cargo facility is located between the two runways, over three miles from the nearest sensitive receptor. The diesel particulate emissions generated at the facility would not expose sensitive receptor to substantial pollution concentrations and therefore impacts are ***less than significant***.

HEALTH EFFECTS OF CRITERIA POLLUTANTS

The EPA and CARB have established AAQS at levels above which concentrations could be harmful to human health and welfare, with an adequate margin of safety. Further, California air districts, like the SMAQMD, have established emission-based thresholds that provide project-level estimates of criteria air pollutant quantities that air basins can accommodate without affecting the attainment dates for the AAQS. Accordingly, elevated levels of criteria air pollutants as a result of a project's emissions could cause adverse health effects associated with these pollutants. However, as discussed below, the health risks associated with exposure to criteria pollutants are evaluated on a regional level. As a result, the mass emissions significance thresholds used in CEQA air quality analysis are not necessarily indicative of any localized human health impact that a project may have (SCAQMD 2015; SJVAPCD 2015). Therefore, even if the project were to exceed the mass regional emissions thresholds, this would not necessarily indicate that the project would cause or contribute to the exposure of sensitive receptors to ground-level concentrations in excess of health-protective levels.

In *Sierra Club v. County of Fresno* (Sierra Club) the Supreme Court held that CEQA requires environmental impact reports to either (i) make a "reasonable effort" to substantively connect the estimated amount of a given air pollutant a project will produce and the health effects associated with that pollutant, or (ii) explain why such an analysis is infeasible (6 Cal.5th at 1165-66). However, the Court also clarified that CEQA "does not mandate" that EIRs include "an in-depth risk assessment" that provides "a detailed comprehensive analysis … to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population wide health risks associated with those levels of exposure." Id. at 1665.

NO_x and ROG are precursor emissions that form O_3 in the atmosphere in the presence of sunlight where the pollutants undergo complex chemical reactions. It takes time and the influence of meteorological conditions for these reactions to occur, so O_3 may be formed at a distance downwind from the sources. Breathing ground-level O_3 can result in health effects that include reduced lung function, inflammation of airways, throat irritation, pain, burning, or discomfort in the chest when taking a deep breath, chest tightness, wheezing, or shortness of breath. In addition to these effects, evidence from observational studies strongly indicates that higher daily O_3 concentrations are associated with increased asthma attacks, increased hospital admissions, increased daily mortality, and other markers of morbidity. The consistency and coherence of the evidence for effects upon asthmatics suggests that O_3 can make asthma symptoms worse and can increase sensitivity to asthma triggers.

There is currently no methodology available that can accurately quantify regional health effects from CO, NO_2 or O_3 exposure associated with an individual project's ROG or NO_x emissions. The SCAQMD reached a similar conclusion in its *Amicus Curiae* brief filed with the California Supreme Court in the case of *Sierra Club v. County of Fresno*, when, speaking about ozone, the SCAQMD stated that it does not know of a way to accurately quantify health impacts caused by emissions produced on a scale as small as individual projects. One existing tool, U.S. EPA's Environmental Benefits Mapping and Analysis Program (BenMAP), calculates the number and economic value of air pollution-related deaths and illnesses resulting from changes in O_3 and $PM_{2.5}$ concentration. However, the expected changes in regional O_3 concentrations associated with the proposed project would be so low that BenMAP would likely produce estimates of health effects that are near zero.

The SMAQMD prepared Guidance to Address the Friant Ranch Ruling for CEQA Projects in the District (October 2020). The guidance provides screening health information for projects at or below regional CEQA thresholds of significance emissions levels and selected strategic areas above thresholds of significance emissions levels. Modeling guidance for large projects located outside strategic areas is also included.

The SMAQMD provided five potential strategic area project locations for use in the health effects screening modeling. These five locations are intended to be used as proxy locations for nearby projects exceeding the thresholds of significance. The Sacramento Strategic Area is applicable to the proposed project. The screening modeling addressed hypothetical sources at each of the five strategic area project locations at emission levels that were two times (2x) and 8 times (8x) the maximum threshold of significance level. The SMAQMD developed a Strategic Area Projects Health Effects Screening Tool spreadsheet that can be used to estimate health effects for potential projects with emissions below the 8x the threshold of significance level. The proposed cargo facility's and Master Plan Update's anticipated operational emissions (see Table AQ-7 and Table AQ-8) were input into the SMAQMD Health Effects Screening Tool, which can be reviewed in Appendix AQ-1. It should be noted that both the proposed cargo facility's and Master Plan Update's operational emissions were less than 2x the threshold of significance. Based on the results of the tool, the percent of background health indices would be less than one percent (i.e., no more than 0.011 percent). Therefore, the health effects associated with the proposed cargo facility and Master Plan Update would be negligible.

MITIGATION MEASURES

None recommended.

IMPACT: CREATE OBJECTIONABLE ODORS AFFECTING A SUBSTANTIAL NUMBER OF PEOPLE

SMAQMD does not have a specific methodology to quantify odors from a proposed project. Rather, SMAQMD's Guide anticipates a project by project analysis that reviews several factors including nature of operational activities and type of odors, metrological conditions, and surrounding land uses. Understanding odor is subjective; thus, this analysis provides a qualitative analysis based on these three factors to assess potential odor from the proposed project.

The proposed project does not include land uses that typically produce objectionable odors. However, activities on nearby properties include agricultural crops, recreational uses (golf) and industrial development. Agricultural practices typically include use of off-road heavy-duty diesel equipment, including trucks, tractors, and stationary machinery and can be a source of objectionable odors.

Diesel exhaust produced during construction-related activities and associated with truck trips is the primary source of odors associated with the proposed project. Construction emissions are temporary and generally disperse rapidly. Truck trips are along an unpopulated portion of Elverta Road. Further, the nearest sensitive receptor (i.e., school, day-care, nursing home, hospital) is two miles from the project site. Implementation of best management practices and mitigation measures AQ-1 and AQ-4 and AQ-5 reduce diesel particulate matter. Consistent with the prior EIR analysis, the proposed project would not create objectionable odors and impacts are ***less than significant***.

MITIGATION MEASURES

None recommended.

4 BIOLOGICAL RESOURCES

INTRODUCTION

The Sacramento International Airport (SMF) is located in the Natomas Basin, which is habitat for endangered and threatened species and is within the Pacific Flyway for migratory birds. Over the years, biological assessments have been completed for various projects in and around SMF. Information presented in this chapter builds upon the biological resources identified during the preparation of the 2007 Master Plan EIR.

ENVIRONMENTAL SETTING

Most of the land adjacent to airport property, as well as County of Sacramento (County) land north of Interstate 5 (I-5) and south of Elverta Road is in agricultural uses (Plate BR-1). Much of this land has traditionally been in rice cultivation. Airport land outside the airport operations area (AOA) that has been acquired as a buffer against incompatible land uses has been farmed by individuals who lease the land from the County.

The project study area includes an extensive network of drainage and/or agricultural supply ditches interconnected by underground pipelines, culverts, gates, and drop structures (Plate BR-2a through Plate BR-2i), some of which are located within and adjacent to the AOA. With the exception of four gunite-lined ditches in the AOA, all of the ditches in the project area are earthen. Some of these ditches contain instream freshwater marsh vegetation, whereas others are devoid of vegetation at most times because of frequent mechanical clearing. A number of these ditches were originally installed by Reclamation District 1000, the Natomas Central Mutual Water Company (NCMWC), or by farmers on what is now airport property for the purpose of moving water from one part of the Natomas Basin to another. Although some ditches may now function as airport stormwater facilities, many are merely artifacts of past activities and no longer serve any function related to the airport.

All of the drainage and/or agricultural supply ditches in the project area are hydrologically connected to the Sacramento River through a series of drainages and pumping stations. The U.S. Army Corps of Engineers (USACE) has assumed jurisdiction over all of the ditches in the project study area south of Elverta Road under Section 404 of the Clean Water Act.

Freshwater marshes, which consist of herbaceous wetlands that are dominated by emergent vegetation such as grasses, reeds, rushes, and sedges, are present in the project study area. This marsh habitat is most frequently associated with low depressions at the edges of irrigation and drainage ditches. In addition to overflow from adjacent canals, many areas of freshwater marsh are supported by surface and sub-surface water flows from adjacent uplands that naturally drain into the marsh areas due to topographic gradients, such as the large remnant patches of freshwater marsh at Prichard Lake north of Elverta Road.

Seasonal wetlands dominated by grasses and forbs are present in the areas that pond or remain flooded for long periods during a portion of the year, generally the rainy winter season, then dry up after regular rainfall ceases, typically in the spring. Within the project study area, seasonal wetlands are found in four general locations: 1) at the upland edges of freshwater marshes; 2) in association with small drainage ditches; 3) at the toe of the Sacramento River levee; and 4) farmed seasonal wetlands north of Elverta Road that are apparently sustained by groundwater seepage from the adjacent Sacramento River and high groundwater levels.

A pasture consisting of grasses and legumes north of Elverta Road (Plate BR-3) also qualifies as a seasonal wetland. This pasture is likely fed by overflow from a bordering ditch and overland and sub-surface flows from surrounding, topographically higher uplands to the west. There is no obvious evidence that this area has been irrigated, at least in the recent past.

Remnant patches of riparian habitat are present in the project study area north of Elverta Road and west of the AOA along the drainage ditch DD21 (Plate BR-3). This habitat consists primarily of woodlands containing Fremont cottonwood (*Populus fremontii*), valley oak (*Quercus labata*), Oregon ash (*Fraxinus latifolia*), California black walnut (*Juglans californica* var. *hindsii*), box elder (*Acer negundo*), and Goodding's willow (*Salix gooddingii*). In some areas, riparian scrub, dominated by willow species such as arroyo willow (*Salix lasiolepis*) and sandbar willow (*S. exigua*), occurs as a subcanopy within the riparian woodland. Riparian scrub also occurs as a distinct habitat type along several ditches north of Elverta Road. These areas typically consist of an open to dense shrubby thicket dominated by a mixture of sandbar willow, arroyo willow, red willow (*Salix laevigata*), and immature stands of mixed riparian woodland tree species.

Oak woodland occurs in relatively small patches in the project study area, primarily along ditches north of Elverta Road (Plate BR-4). The patches range from dense stands of oak trees that dominate the upper canopy to oak savannas, in which mature oak trees provide an open canopy over annual grassland. Many of the same tree and shrub species found in mixed riparian woodlands are also found in oak woodlands; however, oak trees provide the dominant upper canopy cover in this habitat type.

Plate BR-1: Aerial Photo Overview

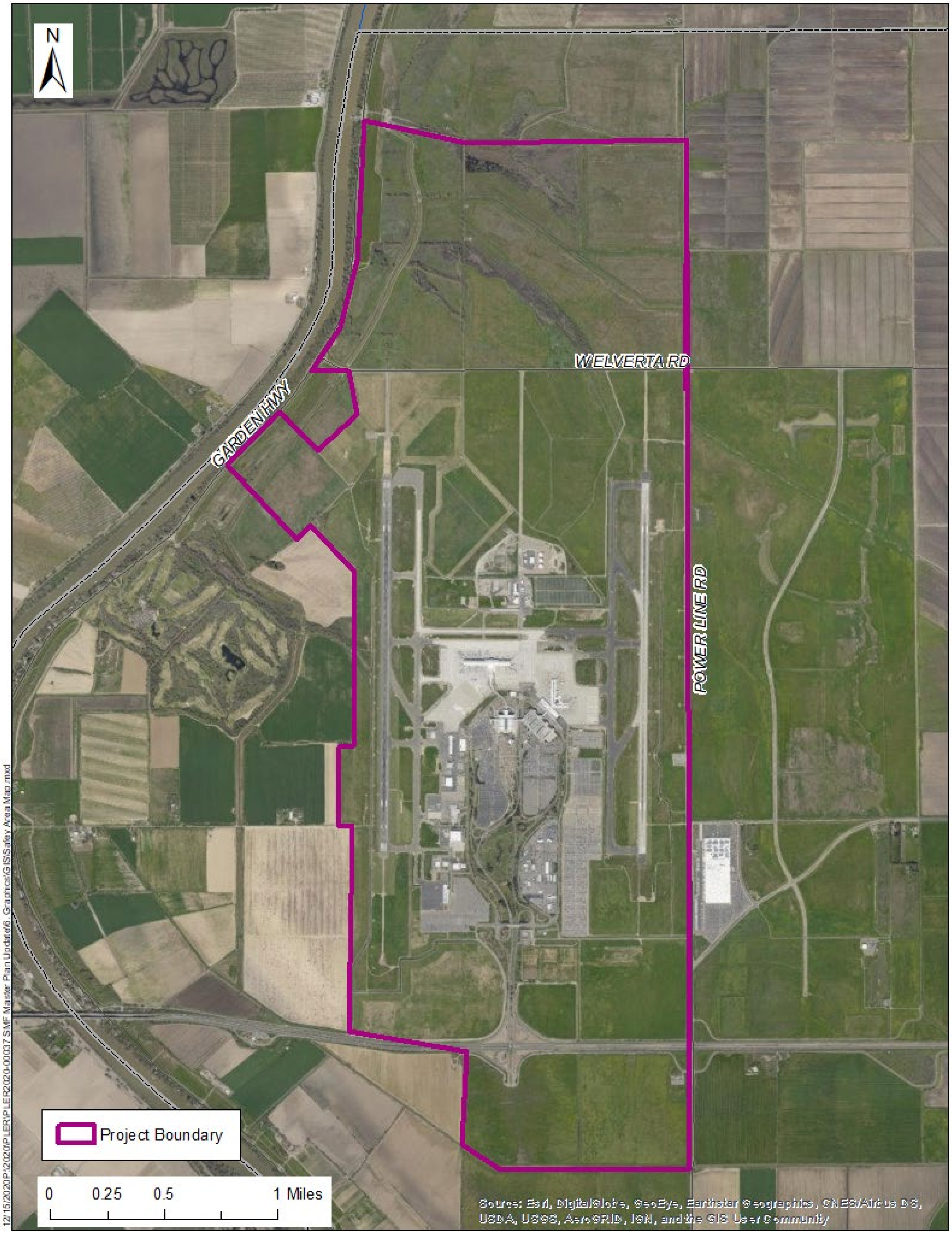


Plate BR-2a: 2016 Revised Wetland Delineation

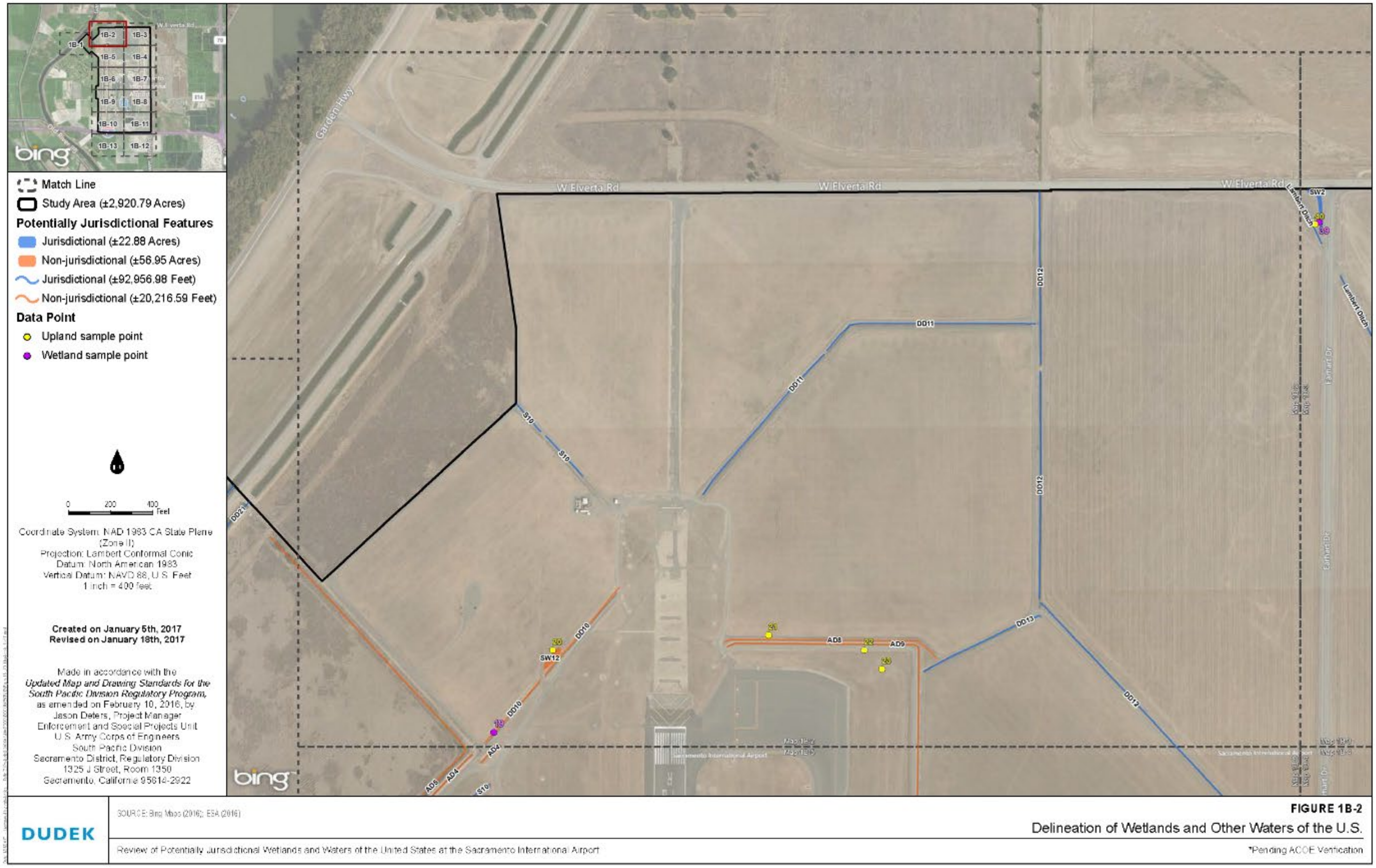


Plate BR-2b: 2016 Revised Wetland Delineation

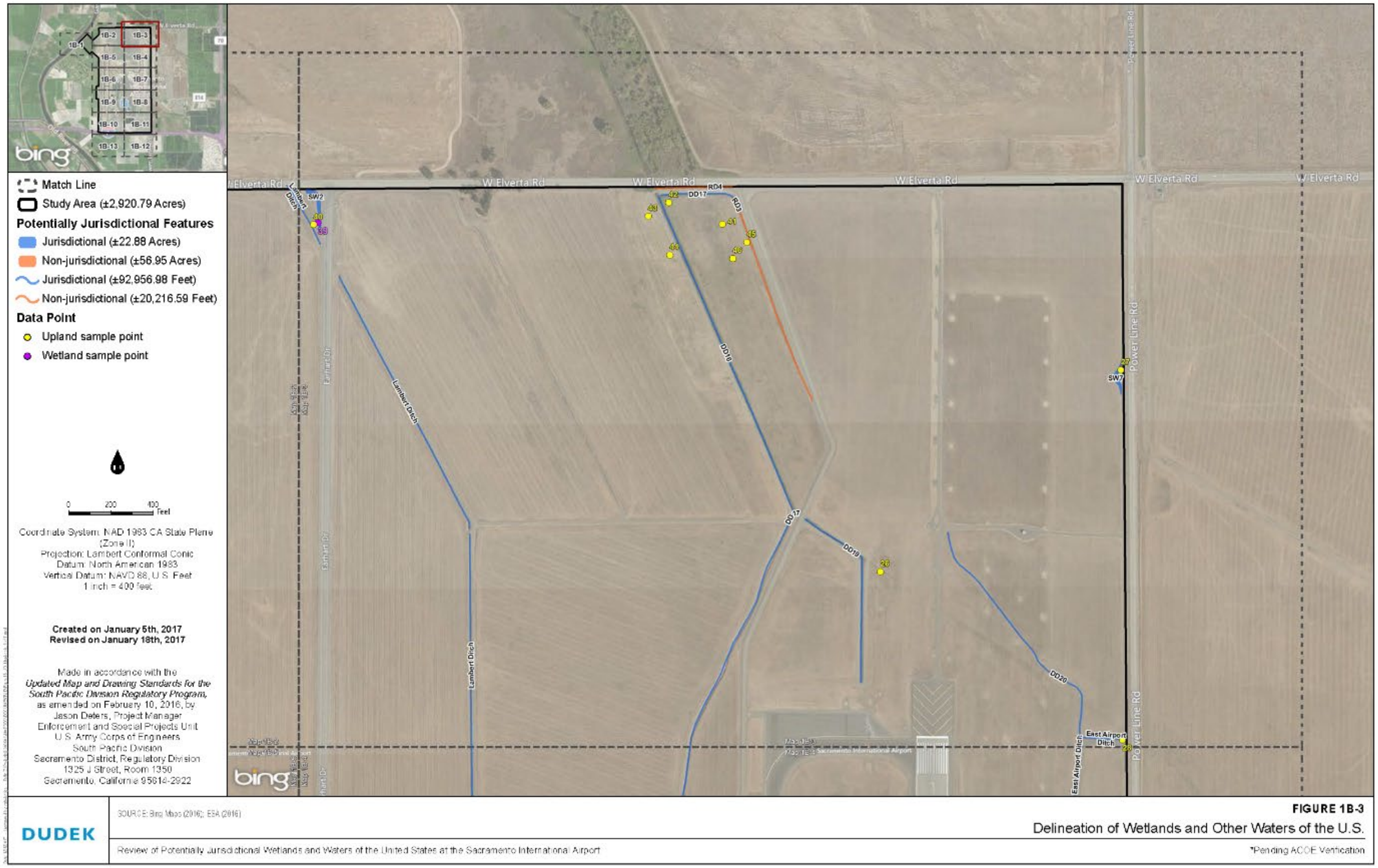


Plate BR-2c: 2016 Revised Wetland Delineation

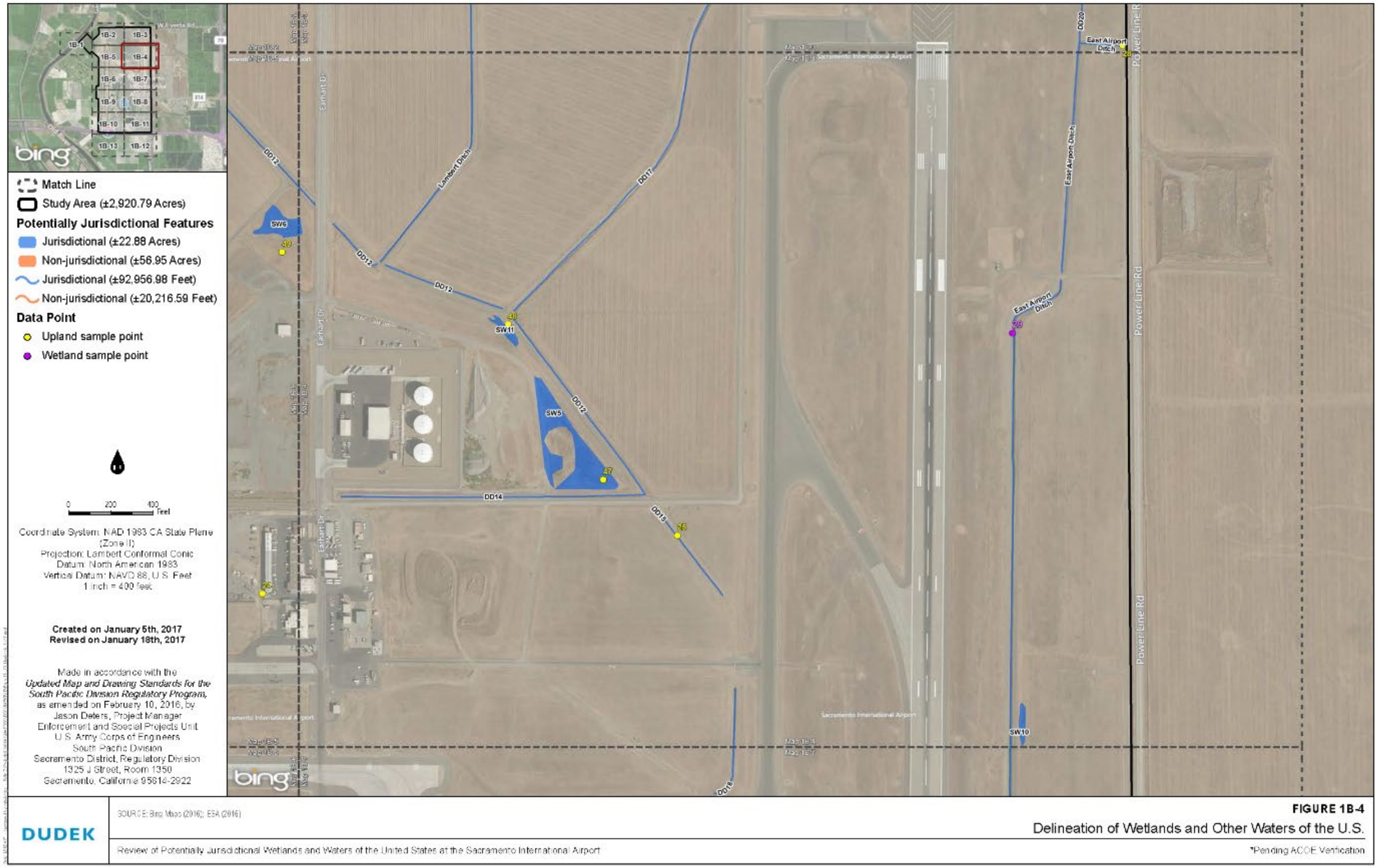


Plate BR-2d: 2016 Revised Wetland Delineation

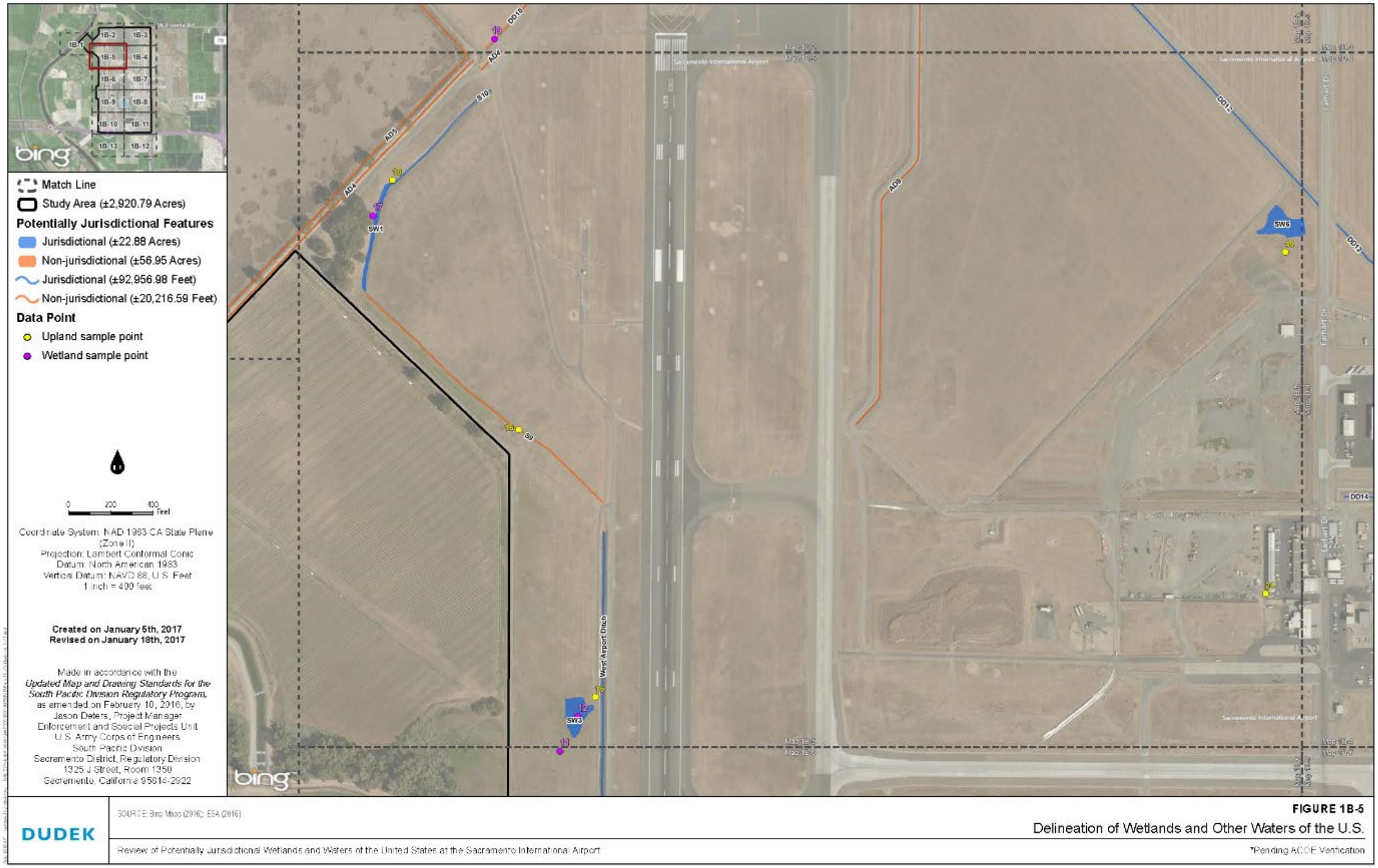


Plate BR-2e: 2016 Revised Wetland Delineation

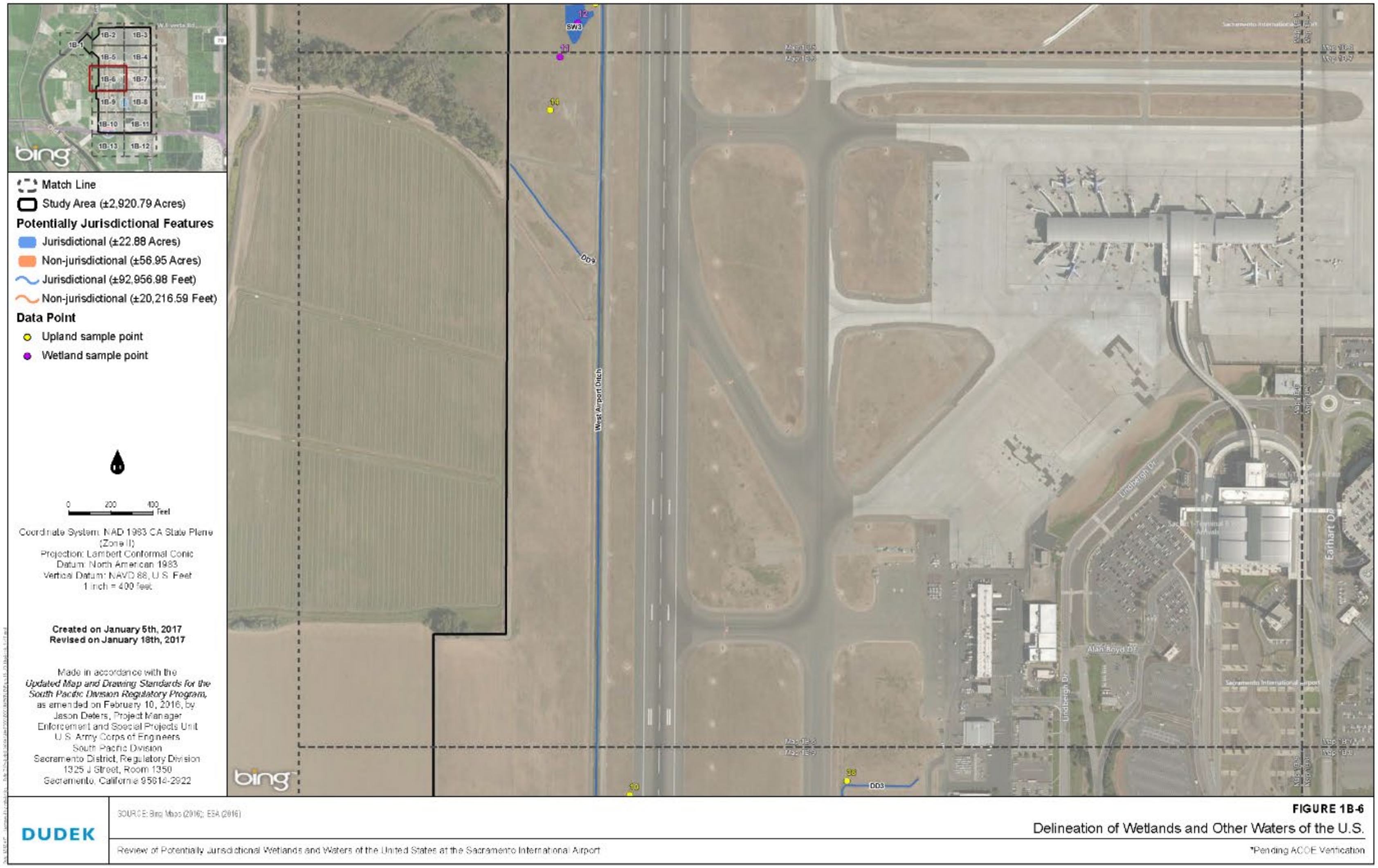


Plate BR-2f: 2016 Revised Wetland Delineation

Plate BR-2g: 2016 Revised Wetland Delineation

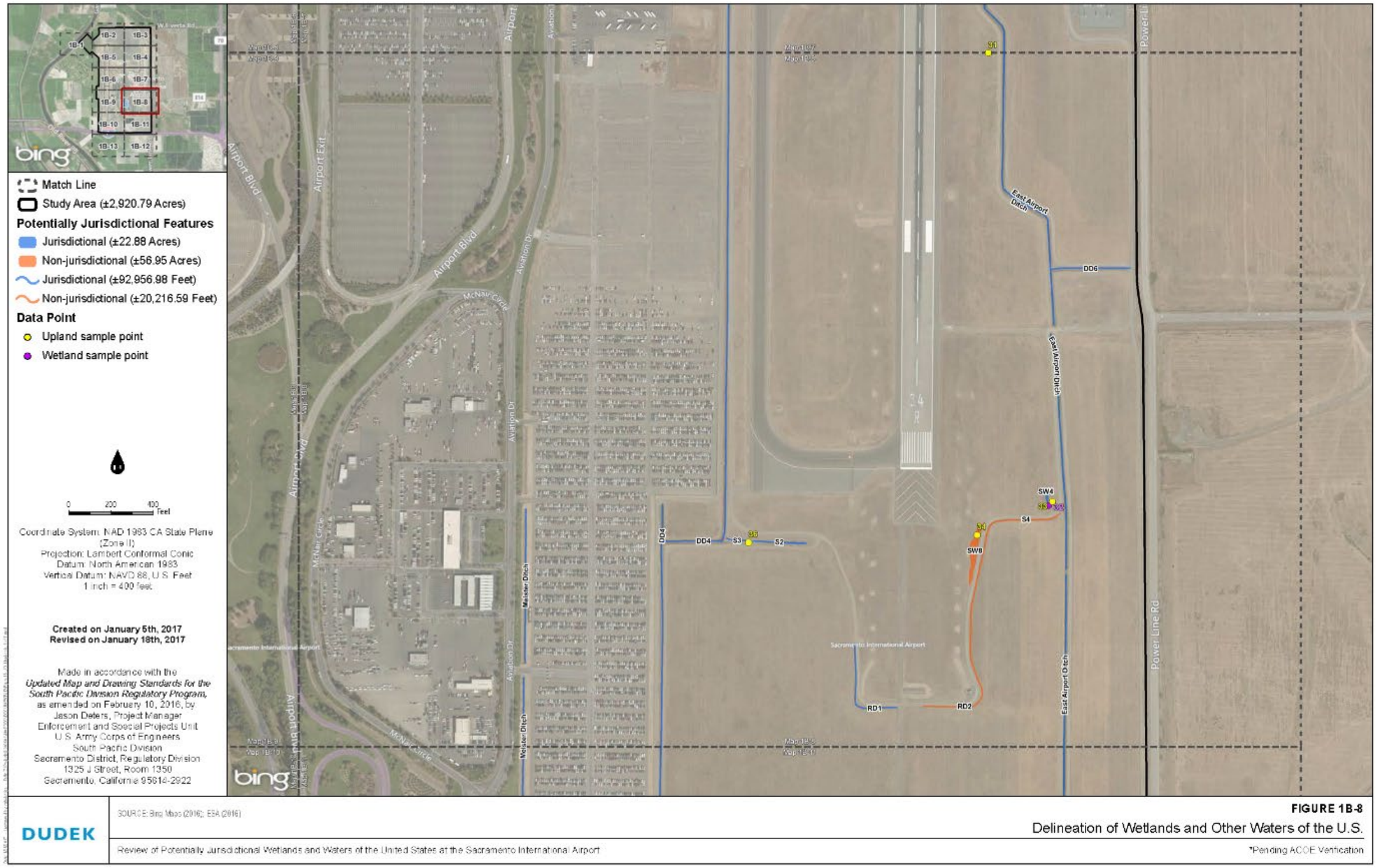


Plate BR-2h: 2016 Revised Wetland Delineation

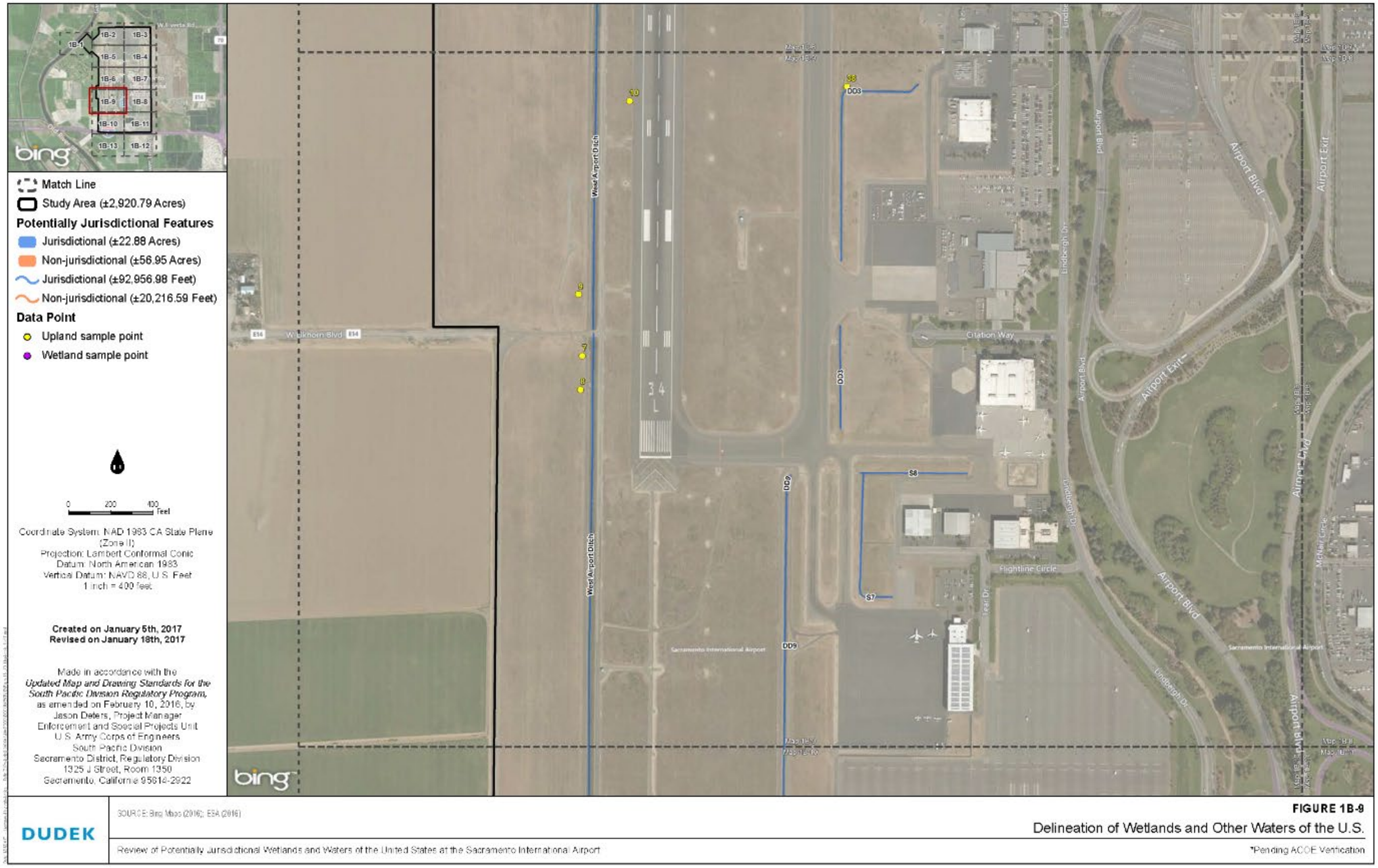


Plate BR-2i: 2016 Revised Wetland Delineation

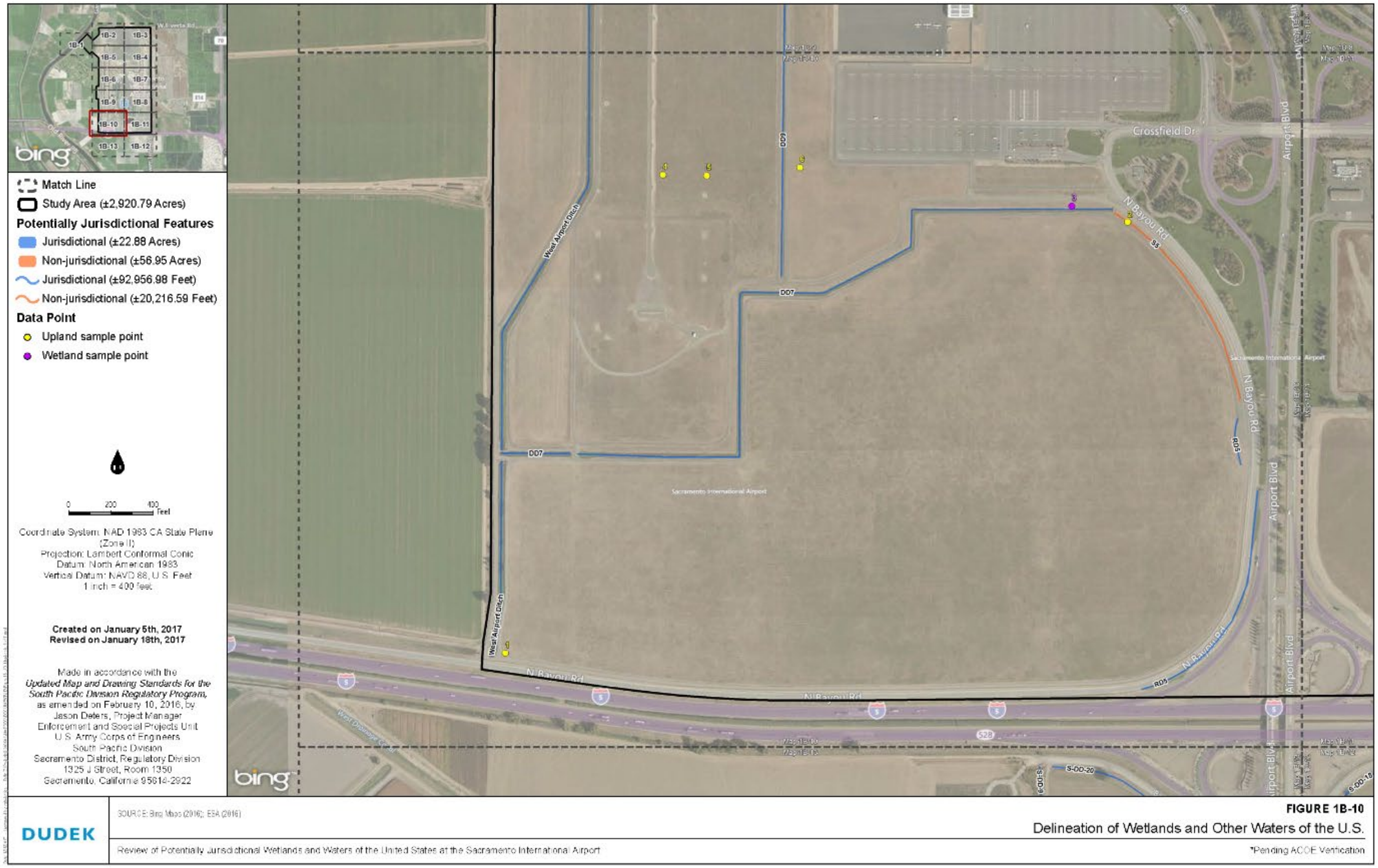


Plate BR-2j: 2016 Revised Wetland Delineation

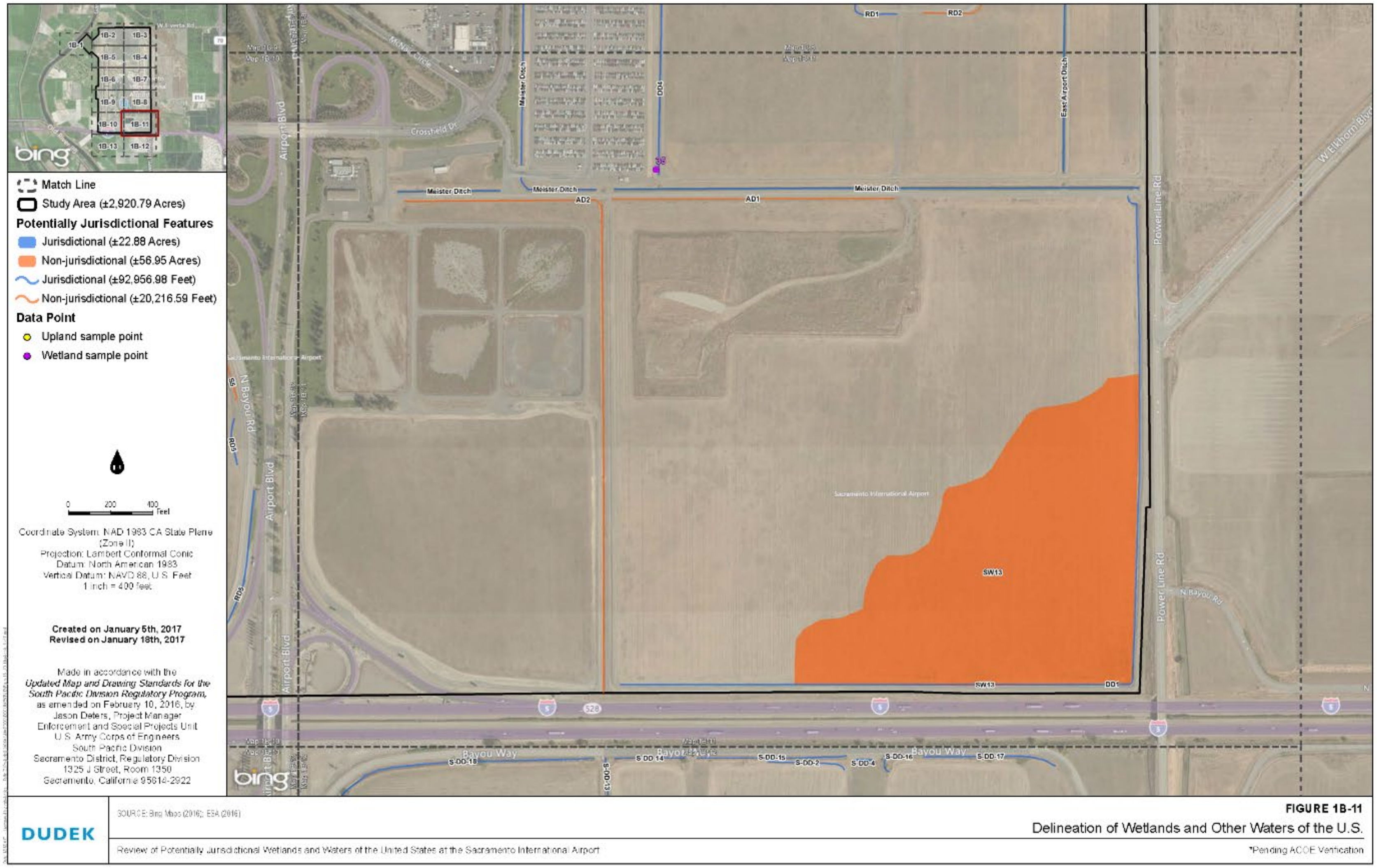


Plate BR-2k: 2016 Revised Wetland Delineation

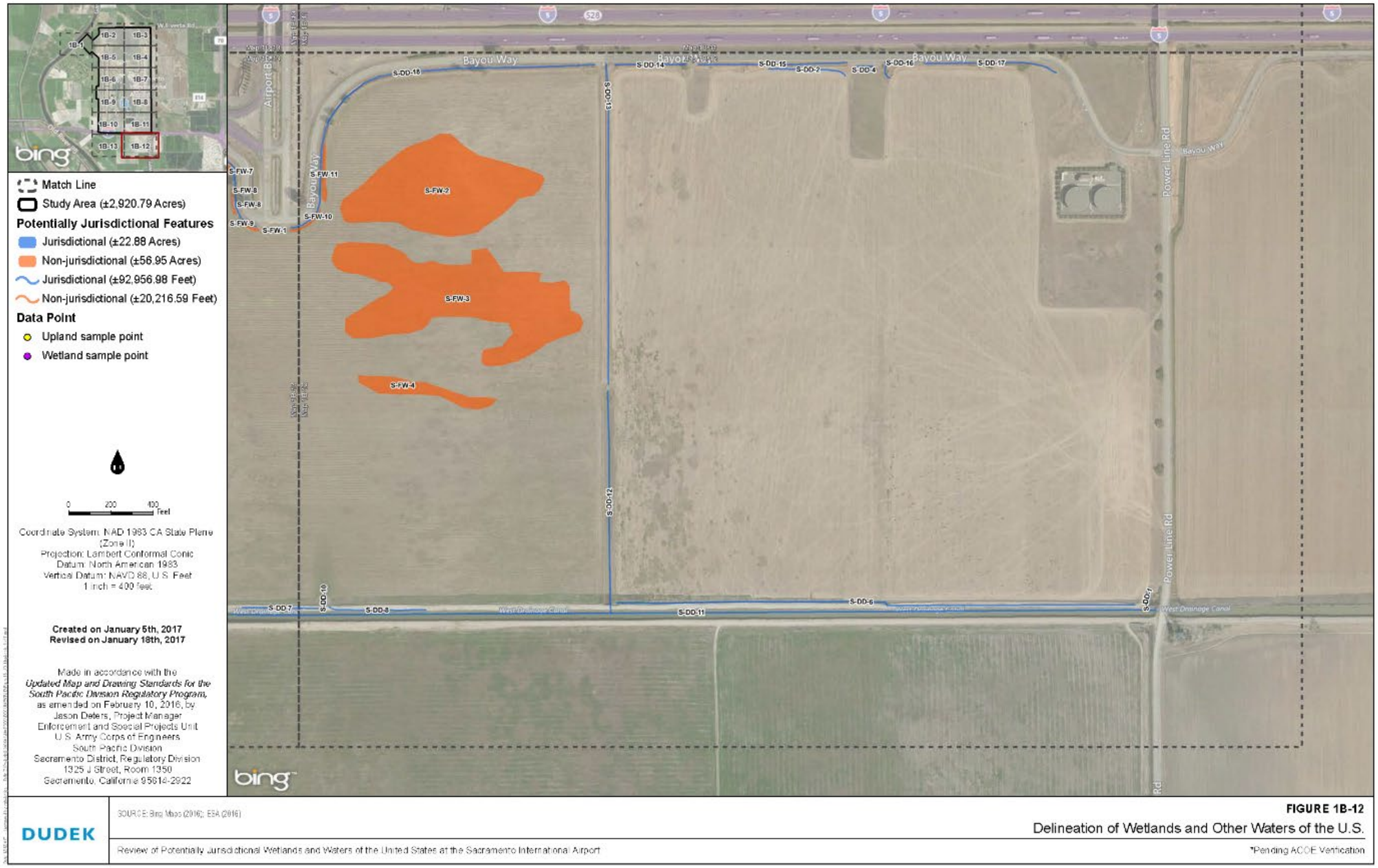


Plate BR-2I: 2016 Revised Wetland Delineation

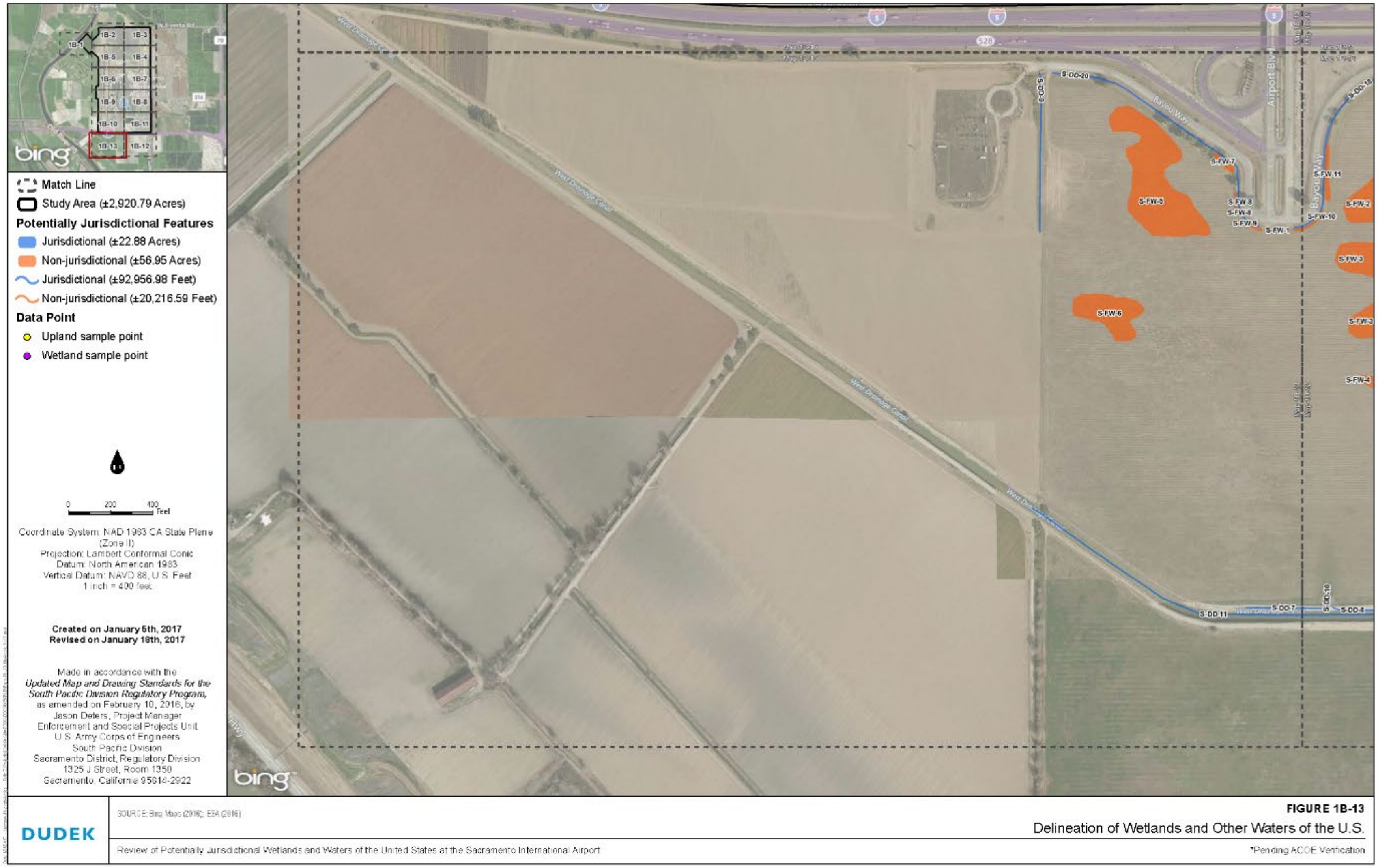


Plate BR-3: North of Elverta Road Wetland Delineation (2006)

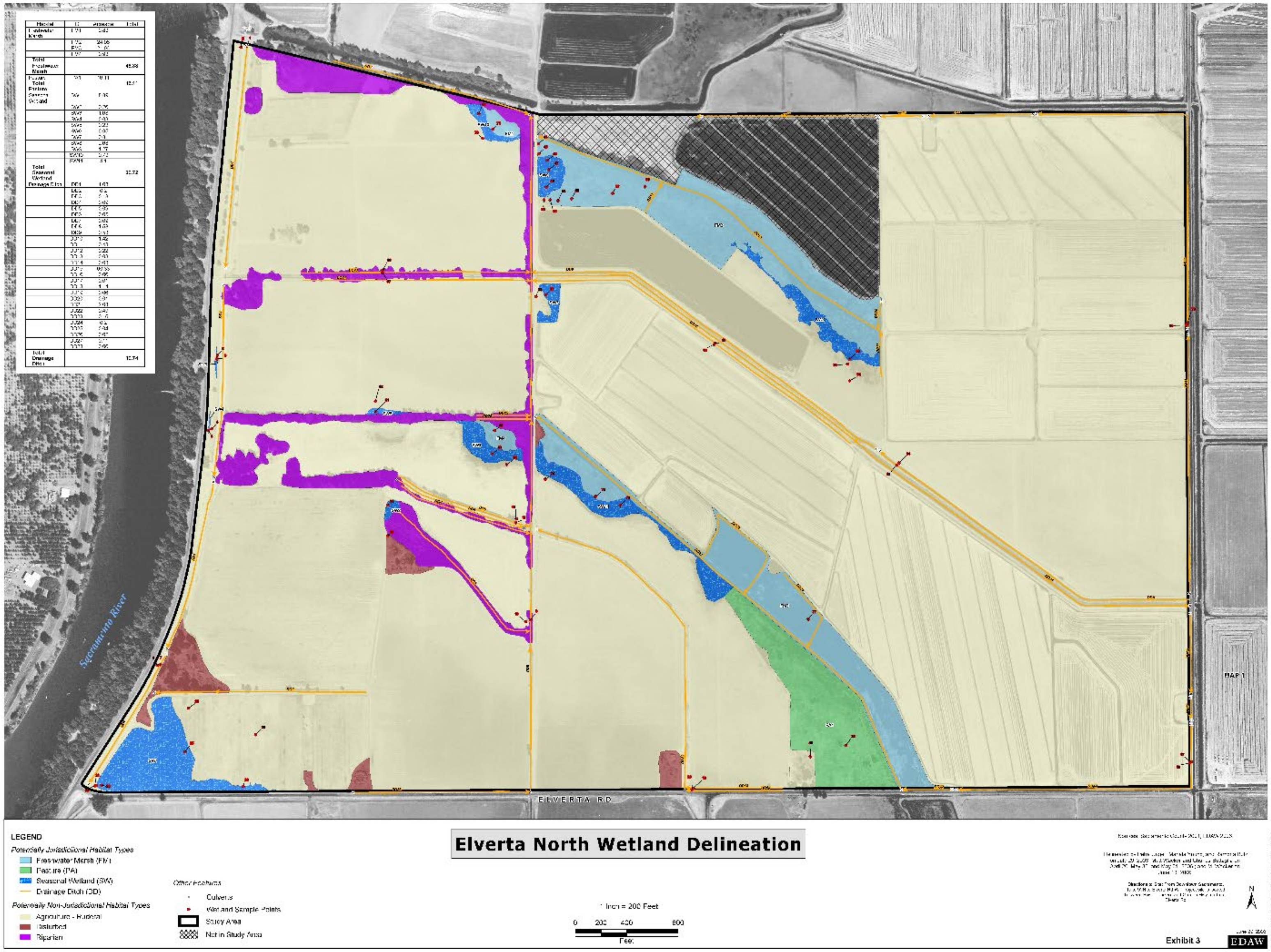
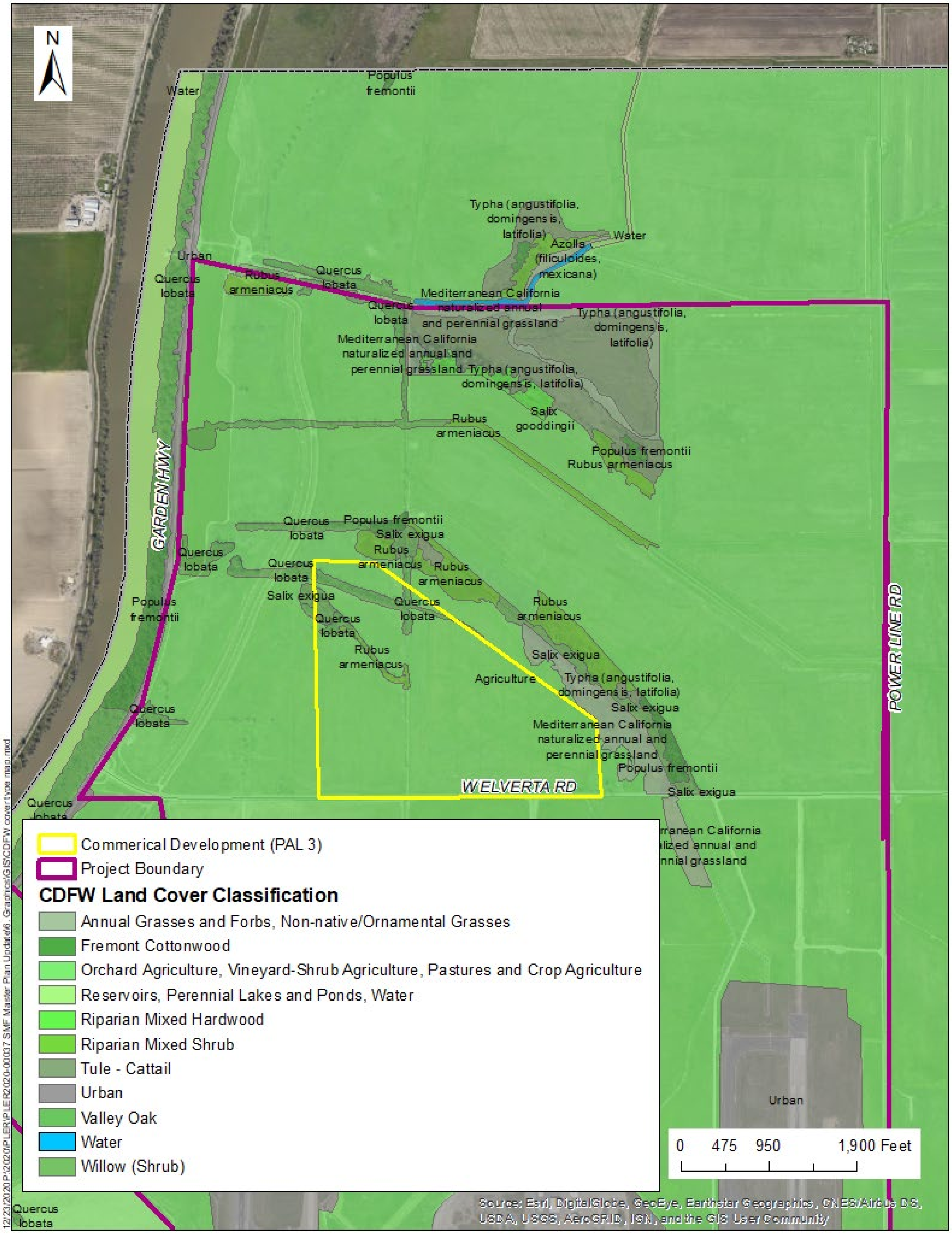


Plate BR-4: CDFW Land Cover Classifications North of Elverta Road



REGULATORY SETTING

FEDERAL

FEDERAL ENDANGERED SPECIES ACT

Under the Federal Endangered Species Act (FESA) of 1973, the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as endangered or threatened. FESA defines "endangered" species as any species in danger of extinction throughout all or a significant portion of its range. A "threatened" species is any species that is likely to become an "endangered" species within the foreseeable future throughout all or a significant portion of its range. Additional special-status species include "candidate" species and "species of concern." "Candidate" species are those for which the Department of Interior, United States Fish and Wildlife Service (USFWS) has enough information on file to propose listing as endangered or threatened. "Species of concern" are those for which listing is possibly appropriate but for which the USFWS lacks sufficient information to support a listing proposal. A species that has been "delisted" is one whose population has met its recovery goal target and is no longer in jeopardy of extinction. Taking of federally listed species is prohibited under Section 9 of FESA. To "take" is defined by FESA (Section 3[19]) to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."

All government agencies must review their actions and determine if a "may affect" situation occurs with respect to a federally listed or proposed species. If the agency makes a "may affect" determination, it is then required to request concurrence with a "may affect, but not likely to adversely affect" finding or formally consult with the USFWS or National Marine Fisheries Service (NMFS).

For federal agencies, the consultation is conducted under Section 7 of FESA. The agency submits a Biological Assessment to USFWS that evaluates the potential adverse effects to federally listed species. The USFWS then prepares a Biological Opinion that addresses the requirements that must be followed to avoid, minimize, and compensate for impacts to federally listed species and their habitat.

For non-federal agencies, the consultation is conducted under Section 10 of FESA. The agency submits an incidental take[1] permit application to USFWS accompanied by a habitat conservation plan (HCP). The purpose of the habitat conservation planning process associated with the permit is to ensure there is adequate minimization and mitigation of the effects of the authorized incidental take. The purpose of the permit is to authorize the incidental take of a listed species, not to authorize the activities that result in take (USFWS 2005).

[1] Incidental take is take of listed fish or wildlife species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a federal agency or applicant (50 CFR 402.2).

USFWS SACRAMENTO OFFICE DISCLAIMER

There are a number of biological resources located on the project site, including wetlands and special status species. As a requirement of the USFWS, the following notification is provided to proponents of any project that has the potential to adversely affect threatened or endangered species:

> "The applicant is hereby notified of additional conditions as stipulated by the U.S. Fish and Wildlife Service. Features of the applicant's project may adversely affect federally listed threatened or endangered species. An applicant must go through one of two processes to obtain authorization to take federally listed species incidental to completing his or her project. One of the processes is formal consultation. When the authorization or funding of a Federal agency is an aspect of a project that may affect federally listed species, Section 7 of the Endangered Species Act requires the Federal agency to formally consult with the Service. Formal consultation is concluded when the Service issues a biological opinion to the Federal agency. The biological opinion includes terms and conditions to minimize the effect of take on listed species. The Federal agency must make the terms and conditions of the biological opinion into binding conditions of its own authorization to the project applicant. An example of this process is when the U.S. Army Corps of Engineers consults with the Service prior to issuing a permit to fill jurisdictional waters under Section 404 of the Clean Water Act. The terms and conditions of the biological opinion become binding on the project applicant through the Corps' 404 authorization. When no Federal funding or authorization is involved in a project, an applicant must prepare a habitat conservation plan and obtain a permit directly from the Service in accordance with Section 10(a)(1)(B) of the Act. For additional information on these processes please contact the Endangered Species Division of the U.S. Fish and Wildlife Service's Sacramento Fish and Wildlife Office at (916) 414-6600".

FISH AND WILDLIFE COORDINATION ACT

The Fish and Wildlife Coordination Act authorizes the USFWS and State agencies responsible for fish and wildlife resources to investigate all proposed federal undertakings and nonfederal actions that need a federal permit or license that would control or modify a stream or water body and to make mitigation and enhancement recommendations to the involved federal agency. "Recommendations…shall be as specific as practicable with respect to features recommended for wildlife conservation and development, lands to be utilized or acquired for such purposes, the results expected, and shall describe the damage to wildlife attributable to the project and the measures proposed for mitigating or compensating for these damages (16 U.S.C. §661)." In addition, the Act requires that wildlife conservation be coordinated with other features of water resource development programs.

MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §703-711) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered a "take" and is potentially punishable by fines and/or imprisonment. Take is defined as any attempt to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, (and) any part, nest, or eggs of any such bird.

Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds

Executive Order 13186 was created in 2001 to further the intent of the migratory bird conventions, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Acts, the Fish and Wildlife Service Coordination Act, and FESA. It requires federal agency actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within two years, a Memorandum of Understanding with the USFWS that will promote the conservation of migratory bird populations. Each memo will establish protocols for implementation of the memo and for reporting accomplishments.

Executive Order 13112: Invasive Species

Under Executive Order 13112, projects that occur on federal lands or are federally funded must, subject to the availability of appropriations, and within administration budgetary limits, use relevant programs and authorities to (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to, and control, populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; and (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded.

Clean Water Act

The USACE has jurisdiction and permitting authority under Section 404 of the Clean Water Act over the discharge of dredged or fill material into waters of the United States, including wetlands. The USACE determines the significance of and approves, restricts, or prohibits discharges through application of the Section 404(b)(1) guidelines, the substantive criteria for dredging and fill material discharges under this act. These guidelines have been developed by the U.S. Environmental Protection Agency in conjunction with the USACE. The guidelines are based on the precept that dredged and fill material should not be discharged into aquatic ecosystems, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probably impacts of other activities affecting the ecosystems of concern. Under the Fish and Wildlife Coordination Act, the USFWS advises the USACE on projects involving dredge and fill activities in waters and wetlands of the United States. Work on this project may require the County to obtain a USACE 404 Permit.

Wildlife Hazard Management Plan

In accordance with 14 CFR 139.337(b), the FAA requires commercial airports to conduct a wildlife hazard assessment when any of the following events occur on or near the airport:

- An air carrier aircraft experiences multiple wildlife strikes;
- An air carrier aircraft experiences substantial damage from striking wildlife. Substantial damage means damage or structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component;
- An air carrier aircraft experiences an engine ingestion of wildlife; and/or,
- Wildlife of a size, or in numbers, capable of causing an event described above is observed to have access to any airport flight pattern or aircraft movement area.

The wildlife hazard assessment shall contain at least the following [14CFR 139.337(c)]:

- An analysis of the events or circumstances that prompted the assessment;
- Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrence;
- Identification and location of features on and near the airport that attract wildlife;
- A description of wildlife hazards to air carrier operations; and,
- Recommended actions for reducing identified wildlife hazards to air carrier operations.

Sacramento County Department of Airports (SCDA) used the U.S. Department of Agriculture Wildlife Service (USDA-WS) to conduct the required wildlife hazard assessment. From this assessment, the FAA determined that a wildlife hazard management plan was needed for the airport. SCDA prepared the initial plan for SMF in 1996. During 2006, a comprehensive revision to the Wildlife Hazard Management Plan for SMF was submitted to FAA for review. Modifications to the plan were made in response to FAA comments received in 2006. The final plan revision was submitted to the FAA in early March 2007.

In 2003, the FAA, U.S. Air Force, U.S. Army, U.S. Environmental Protection Agency, USFWS, and U.S. Department of Agriculture entered into a Memorandum of Agreement (MOA) to address aircraft-wildlife strikes. Among other things, the signatories to the MOA agreed to cooperate with airport operators to develop a specific, wildlife hazard management plan for a given location when a potential wildlife hazard is identified. The plan will meet applicable FAA, U.S. Air Force, and other relevant requirements. In developing the plan, the appropriate agencies will use their expertise and attempt to integrate their respective programmatic responsibilities while complying with existing laws, regulations, and policies.

State Of California

California Endangered Species Act

Section 2080 of the California Endangered Species Act (CESA) prohibits the “take” of state-listed threatened and endangered species. The CESA defines take as any action or attempt to hunt, pursue, catch, capture, or kill any listed species. If a proposed project may result in take of a listed species, a permit pursuant to Section 2080 of CESA is required from the California Department of Fish and Wildlife (CDFW). Take of state-listed species is authorized by Section 2081 through a permit process. Take can also be authorized through Section 2835 with an approved Natural Community Conservation Plan (NCCP).

The CDFW also designates “fully protected” or “protected” species as those that may not be taken or possessed without a permit from the Fish and Game Commission and/or the CDFW. Species designated as fully protected or protected may or may not be listed as endangered or threatened.

Lake And Streambed Alteration Program

Fish and Game Code Section 1602 requires any person, state or local governmental agency, or public utility to notify CDFW before beginning any activity that will do one or more of the following: 1) substantially obstruct or divert the natural flow of a river, stream, or lake; 2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or 3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state.

Notification is generally required for any project that will take place in the vicinity of a river, stream, or lake. CDFW will determine whether a Lake or Streambed Alteration Agreement is required for the activity. An agreement will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an agreement is required, it will be prepared by CDFW in coordination with the applicant. The agreement will include measures, as necessary, to protect fish and wildlife resources while conducting the project. Numerous canals and ditches cross airport property, and, as indicated above, many of these are under USACE jurisdiction; therefore, a Streambed Alteration Agreement may be required for the project.

LOCAL

SACRAMENTO COUNTY GENERAL PLAN

The Sacramento County General Plan contains numerous goals, policies, concepts and strategies to protect and/or preserve biological resources. The following provides the goals and policies applicable to the proposed Project:

AG-17. The establishment of conservation easements combining preservation of agricultural uses, habitat values, and open space on the same property should be encouraged where feasible.

CO-25. Support the preservation, restoration, and creation of riparian corridors, wetlands and buffer zones.

CO-58. Ensure no net loss of wetlands, riparian woodlands, and oak woodlands.

CO-59. Ensure mitigation occurs for any loss of or modification to the following types of acreage and habitat function:

- vernal pools,
- wetlands,
- riparian,
- native vegetative habitat, and
- special status species habitat.

CO-60. Mitigation should be directed to lands identified on the Open Space Vision Diagram and associated component maps (please refer to the Open Space Element).

CO-61. Mitigation should be consistent with Sacramento County-adopted habitat conservation plans.

CO-62. Permanently protect land required as mitigation.

CO-66. Mitigation sites shall have a monitoring and management program including an adaptive management component including an established funding mechanism. The programs shall be consistent with Habitat Conservation Plans that have been adopted or are in draft format.

CO-67. Preserves and conservation areas should have an established funding mechanism, and where needed, an acquisition strategy for its operation and management in perpetuity. This includes existing preserves such as the American River Parkway, Dry Creek Parkway, Cosumnes River Preserve and other plans in progress for riparian areas like Laguna Creek.

CO-68. Preserves shall be planned and managed to the extent feasible so as to avoid conflicts with adjacent agricultural activities (Please also refer to the Agricultural Element).

CO-138. Protect and preserve non-oak native trees along riparian areas if used by Swainson's hawk, as well as landmark and native oak trees measuring a minimum of 6 inches in diameter or 10 inches aggregate for multi-trunk trees at 4.5 feet above ground.

CO-139. Native trees other than oaks, which cannot be protected through development, shall be replaced with in-kind species in accordance with established tree planting specifications, the combined diameter of which shall equal the combined diameter of the trees removed.

Natomas Basin Habitat Conservation Plan

The Natomas Basin Habitat Conservation Plan (NBHCP) establishes a conservation program to mitigate for the loss of biological resources that is expected to result from urban development, operation of irrigation and drainage systems, and rice farming in the Natomas Basin. NBHCP's overall goals include biological protection, economic development, and conservation of agricultural uses. The NBHCP covers 53,341 acres of the interior of the Natomas Basin in northern Sacramento County and southern Sutter County. The basin encompasses both incorporated and unincorporated areas within the jurisdiction of the City of Sacramento, Sacramento County and Sutter County. Most of the basin is in Sacramento County north and east of the Sacramento River and extends north to the Cross Canal in Sutter County. The NBHCP was approved by the U.S. Fish and Wildlife Service (USFWS) in 2003. Only the City of Sacramento and Sutter County are signatories to the NBHCP. The County of Sacramento is not subject to the program and the adjacent "Metro Air Park" has its own habitat conservation plan as outlined below.

Metro Air Park Habitat Conservation Plan

The Metro Air Park Property Owners Association (Association) has received an Incidental Take Permit from USFWS under Section 10 of the FESA covering development within the 1,892-acre Metro Air Park site and 123 acres of off-site lands. As part of the application for this permit, the Association prepared a habitat conservation plan in accordance with FESA Section 10. The habitat conservation plan requires acquisition of mitigation land for Association development including infrastructure requirements. The Association uses the Natomas Basin Conservancy (Conservancy) to secure mitigation land via fee title or conservation easement and transfers ownership of the lands over to the Conservancy to manage in perpetuity for the benefit of species selected for mitigation.

SIGNIFICANCE CRITERIA

Standards for determining thresholds of significance were established based on the State CEQA Guidelines and professional standards. Impacts to biological resources were considered significant if the project would result in any of the following:

1. Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a special-status-species in local or regional regulatory guidance, plans, policies, or regulations or by CDFW or USFWS;

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plan, policies, regulations, or by CDFW or USFWS;

3. Have a substantial adverse effect on protected State or federally protected wetlands or surface waters, as defined by the Army Corps of Engineers Wetland Delineation Manual (1987 ed.) and/or as defined by Sections 401 and 404 of the Clean Water Act (including, but not limited to, seeps, vernal pools, swales, drainages, and perennial waterways) through direct removal, filling, hydrological interruption, or other means;

4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

5. Conflict with any local policies or ordinances protecting biological resources; or

6. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or approved local, regional, or state habitat conservation plan.

METHODOLOGY

The methodologies used to determine significance rely on documents published by or endorsed by regulatory agencies. The applicable documents and methods are cited and described in the applicable impact discussions, below. In absence of such published documents, the analyses rely on the general definitions of significance. In addition, a Biological Resource Assessment prepared by Dudek Consultants was completed for a portion of the project area. Information from the report is incorporated into the impact analysis and the entire report is available on-line as Appendix BR-1 at: https://planningdocuments.saccounty.net/ViewProjectDetails.aspx?ControlNum=PLER2020-00037.

IMPACTS AND ANALYSIS

IMPACT: HAVE A SUBSTANTIAL ADVERSE EFFECT ON PROTECTED STATE OR FEDERALLY PROTECTED WETLANDS OR SURFACE WATERS

A wetland delineation was prepared as part of the prior EIR and Federal Environmental Impact Statement (EIS) process. Airport staff received an Approved Jurisdictional Determination (AJD) for the majority of airport land in 2006. AJDs are only valid for five years and upon expiration, the owner needs to resubmit a new wetland delineation for either an AJD or a Preliminary Jurisdictional Determination (PJD). Airport staff began the process to re-validate the AJD, and ESA Associates prepared and submitted a new wetland delineation to the USACE in 2011. The wetland delineation covers approximately 3,168 acres – 2,858 acres north of I-5 and 310 acres south of I-5 (not including the area north of Elverta Road). The USACE issued a PJD (SPK-2003-00776) on October 13, 2011. A final Wetland delineation report was prepared in January 2012. The PJD identifies 78.6 acres of wetlands or waters in the 3,168 acres study area that are subject to the Clean Water Act (CWA). The PJD does not expire and can be used for future permitting actions. However, if there are changes in the environment or changes to jurisdictional definitions, the applicant can request an AJD at any time with supporting evidence.

In December 2016, Dudek reviewed and revised, as necessary, the 2012 wetland delineation in response to changing regulatory guidance. The revised AJD request was submitted to the USACE, but the review has not been completed by the USACE. Currently, airport staff are no longer pursuing an AJD; therefore, the PJD remains valid for future permitting actions within the study boundary, if desired.

To determine potential impacts associated with the project, the features and corresponding acreages presented in the 2016 revised delineation have been used in this document. The revised delineation does propose slight differences in acreages of jurisdictional and non-jurisdictional features; these differences are presented in Table BR-1.

Table BR-1: 2012 v. 2016 Delineation Comparisons

Feature Type	2012 Delineation Acreage	2016 Revised Delineation Acreage
North of I-5 (south of Elverta Road)		
Freshwater Emergent Wetland/Seasonal Wetland	38.79	37.15
Drainage Ditch	11.18	16.53
Agricultural Ditch	0.61	2.86
Roadside Ditch	0.15	0.26
Swales	0.50	0.54
South of I-5		
Farmed Wetlands	20.40	20.32
Drainage Ditch	4.73	4.75
Total Jurisdictional Features	**76.36**	**22.47**
Total Non-Jurisdictional Features	**--**	**57.25**

The project is largely within the boundaries of the prior wetland delineations. The area proposed for commercial development north of Elverta Road is not included in the most recent delineation. However, the wetland delineation prepared in 2006 by EDAW Consultants is referenced to determine potential impacts for the proposed commercial development shown in PAL 3. The analysis presented in this document is based on these delineation reports. There are approximately 174 acres of wetlands within the Master Plan Update area (area south of I-5 to north of Elverta Road), of which about 117 acres meet the qualifications to be under the jurisdiction of the USACE in accordance with Clean Water Act Section 404. Of the total potentially jurisdictional wetlands, 44 percent (46.9 acres) is freshwater marsh, 22 percent (23.8 acres) is seasonal wetlands, 26 percent (28 acres) is earthen irrigation or drainage ditches, and 15 percent (16 acres) is pasture. Of the total potentially non-jurisdictional wetlands, five percent (2.9 acres) is agricultural and roadside ditches or isolated swales, and 95 percent (54.3 acres) is farmed or seasonal wetlands.

Table BR-2 provides the maximum areas of jurisdictional and non-jurisdictional wetlands that will be impacted by the project south of Elverta Road. Engineering design has not been completed for project elements, so specific areas of temporary wetland disturbance caused during construction cannot be determined at this time. To provide a worst-case analysis, this assessment includes an area of temporary construction disturbance in the estimate of permanent wetland impacts.

Table BR-2: Potential Wetland Impacts for AOA (south of Elverta Rd. & north of I-5)

Wetland Feature	Impacted Acreage
PAL 1	
Drainage Ditch	0.99 Jurisdictional 0.11 Non-Jurisdictional
Agricultural Ditch	0.67 Jurisdictional
Seasonal Wetland	0.46 Jurisdictional
Swale	0.05 Non-Jurisdictional
PAL 2	
Drainage Ditch	0.6 Jurisdictional 0.19 Non-Jurisdictional
Roadside Ditch	0.02 Jurisdictional 0.03 Non-Jurisdictional
Swale	0.01 Non-Jurisdictional
PAL 3	
Drainage Ditch	2.06 Jurisdictional
Agricultural Ditch	0.61 Jurisdictional
Seasonal Wetland	1.79 Jurisdictional
Total for AOA	**7.2 - Jurisdictional** **0.39 - Non-Jurisdictional**

According to the 2006 wetland delineation prepared by EDAW, a large portion of the freshwater marsh and seasonal wetlands north of the AOA are at least partially supported by seepage from irrigation and drainage ditches. The proposed northward extension of Earhart Drive will place small segments of ditches DD13, DD14, DD21, and DD26 (0.14 acre) into culverts. The proposed commercial development shown in PAL 3, may impact up to 1.54 acres of drainage ditches DD3, DD4, DD5, DD6, DD8 (portion), DD16, DD22, and 0.26 acres of seasonal wetland SW 2. In total, approximately, 1.8 acres of wetlands or waters may be impacted north of Elverta Road; however, this is conservative assumption that the entire feature is filled or culverted. Depending on how the features are augmented, the proposed commercial development may reduce the amount of seepage for freshwater marsh and seasonal wetlands adjacent to these ditches (Plate BR-3).

CONCLUSION

Filling of wetlands or waters of the U.S. or State require permits from the USACE for all jurisdictional features, the Regional Water Quality Control Board (RWQCB) for all waters, and the CDFW for features that meet the definition under Section 1600 of the Fish and Game Code. Permits may require mitigation to compensate for the temporary or permanent removal of wetlands or waters. SCDA has indicated that individual projects may pursue an individual permit from the USACE. If the PJD is not used, a new delineation and determination would be require before a permit is issued. This may be beneficial, as site conditions could change based on surrounding hydrological alterations (such as those in Metro Air Park), or changing regulatory guidance.

The permanent removal of wetlands associated with the proposed project is a ***significant impact***. This impact will be reduced to a ***less than significant*** level with implementation of compensatory mitigation in accordance with the Sacramento County *General Plan* Wetland Policies (CO 58 and 59) at a minimum. Compensatory mitigation for wetland impacts will take place as projects of the Master Plan become ready for implementation, beginning with those listed in PAL 1 (approximately 2.28 acres). Potential impacts associated with future PALs may account for an additional loss of up to potentially 9.39 acres.

MITIGATION MEASURES:

BR-1 In order to reduce impacts to wetland habitat the applicant shall comply with one or a combination of the following prior to every project which involves wetlands or waters of the U.S. or State:

a. Where a Section 404 Permit has been issued by the U.S. Army Corps of Engineers, or an application has been made to obtain a Section 404 Permit, the Mitigation and Management Plan required by that permit or proposed to satisfy the requirements of the USACE for granting a permit may be submitted for purposes of achieving a no net-loss of wetlands. The required Plan shall be submitted to the Sacramento County Environmental Coordinator, U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service for approval prior to its implementation.

b. If regulatory permitting processes result in less than a 1:1 compensation ratio for loss of wetlands, the project applicant shall demonstrate that the wetlands which went unmitigated/uncompensated as a result of permitting have been mitigated through other means. Acceptable methods include payment into a mitigation bank or protection of off-site wetlands through the establishment of a permanent conservation easement, subject to the approval of the Environmental Coordinator.

IMPACT: HAVE A SUBSTANTIAL ADVERSE EFFECT, EITHER DIRECTLY OR THROUGH HABITAT MODIFICATION, ON ANY SPECIES IDENTIFIED AS A SPECIAL STATUS SPECIES

A special status species is one that has been identified as having relative scarcity and/or declining populations. Special status species include those formally listed as threatened or endangered, those proposed for formal listing, candidate for federal listing, and those classified as species of special concern. Also included are those species considered to be “fully protected” by CDFW, those granted “special animal” status for tracking and monitoring purposes, and those plant species considered to be rare, threatened, or endangered in California by the California Native Plant Society (CNPS).

Multiple species status designations are applied to animals and plants; relevant definitions are provided below[2].

> *Endangered Species*: Any species, which is in danger of extinction throughout all or a significant portion of its range.
>
> *Threatened Species*: Any species, which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
>
> *Species of Concern*: Any species with declining population levels, limited ranges, and/or other factors that make them vulnerable to extinction and may ultimately qualify the species for threatened or endangered status.
>
> *Fully Protected*: The classification of Fully Protected was California’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Most have subsequently been defined as endangered or threatened, but there are exceptions.
>
> *Special Animals*: A general term that refers to all of the taxa that CDFW is interested in tracking, regardless of their legal or protection status. Though the species themselves have not declined to the extent that they are listed by one of the classifications noted above (endangered, etc), such species are closely associated with a habitat that is declining in California.
>
> *List 1B Plants*: Plants that are rare throughout their range, and have declined significantly over the last century. The majority of plants on this list are endemic to California.
>
> *List 2 Plants*: The same as List 1B plants, except that List 2 plants are common outside of California.

Relevant species for analysis were identified based on species information gathered from the USFWS Sacramento office, CDFW, and from CNPS. A California Fish and Wildlife California Natural Diversity Database (CNDDB 2020) search was also conducted. For the initial CNDDB search the study area was all lands within ten miles

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[2] Source: California and Federal Endangered Species Acts, http://www.dfg.ca.gov/wildlife/nongame/ssc/, http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html, and http://www.cnps.org/cnps/rareplants/ranking.php

of the project boundary, while the USFWS list was based on species present within the Taylor Monument 7.5-minute United States Geological Survey quadrangle.

Table BR-3 reports the species examined as a result of the initial species evaluations. Table BR-3 reports the likelihood of occurrence based on habitat presence either on the site or in proximity of the site, survey results (if any), and nearby recorded species occurrences. Habitat proximity is based on published buffers established by a regulatory agency. For instance, guidance for the Swainson’s hawk establishes a nesting buffer of one-half mile, and includes mitigation requirements for construction activities in that range. Note, that some species are listed for loss of foraging habitat, while others may be listed for loss of breeding habitat. If the species is listed for loss of a particular habitat, it is so reported in Table BR-3 and the likelihood of occurrence will be based specifically on that habitat type. Likelihood of occurrence is rated as Not Present, Low Potential, Moderate Potential, High Potential, or Present, which are defined as:

- *Not Present*: A survey was performed by a qualified biologist, and the species was not found or habitat is absent both on the site and within one mile of the site.
- *Low Potential*: Absence cannot be definitively stated because no surveys were performed, but habitat is near-absent or marginal.
- *Moderate Potential*: Habitat is present, but the species has not been observed within two miles of the site.
- *High Potential*: Habitat is present and the species has been observed within two miles of the site.
- *Present*: The CNDDB contains a recorded occurrence on the site, or the species was found during site-specific surveys.

Species that are not present or were found to have a low potential of occurrence are not discussed further in subsequent analysis sections. Plate BR-5 shows the CNDDB occurrences as of December 2020.

Table BR-3: Special Status Species

Species	Status[1]	Habitat[1]	Potential for Occurrence
BIRDS			
Bald Eagle *Haliaeetus leucocephalus*	SE	Bald eagles both winter and nest along rivers, lakes, or reservoirs that support abundant fish or waterbird prey and that have large trees or snags for perch and roost sites. Nesting is from February through July. Bald eagles are not known to nest in Sacramento County, but have been observed wintering in the County.	Not Present. Project is located at least 0.5 mile from the Sacramento River, where suitable habitat is available.
Bank Swallow *Riparia riparia*	ST	Requires vertical banks and cliffs with fine-textured or sandy soils near streams, rivers, ponds, lakes, and the ocean for nesting. Feeds primarily over grassland, shrubland, savannah, and open riparian areas. Primarily listed for destruction of nesting habitat.	Not Present. Suitable habitat not present within airport property.
Black-Crowned Night Heron	SA	Found along rivers and brackish emergent wetlands, the species is a colonial nester. Nests are usually in densely foliaged trees or vine tangles. Nesting season is February to July. Listed for nesting colonies.	Low Potential. There is a recorded observance from 1989, but there are no other occurrences in the vicinity. There is marginal habitat north of Elverta Road.
Burrowing Owl *Athene cunicularia hypugea*	CSC	Frequents open grasslands and shrublands with perches and burrows. Nests and roosts in old burrows of small mammals and rubble piles. Listed for breeding habitat.	High Potential. Species documented within airport property in 2006 but was not observed during Dudek surveys in 2020. Species has been observed at several locations surrounding SMF.

Species	Status[1]	Habitat[1]	Potential for Occurrence
California Black Rail *Laterallus jamaicensis coturniculus*	ST	A yearlong resident of saline, brackish, and fresh emergent wetlands, the majority of the species are found in the tidal salt marshes of the northern San Francisco Bay region. The only known occurrence in the County is within the Cosumnes River Preserve.	Not Present. Suitable nesting and foraging habitat is not present on or nearby airport property.
Cooper's Hawk *Accipiter cooperii*	SA	Frequents landscapes with wooded patches and groves, along with woodland edge habitats. Nests in riparian areas. Listed for nesting impacts.	Moderate Potential. Suitable habitat is present near the Elverta Road realignment, but there are no recorded occurrences within two miles.
Double-Crested Cormorant *Phalacrocorax auritus*	SA	Associated with estuaries, rivers, and oceans, the species is known to occur along major rivers in the Central Valley. A colonial nester, the species prefers cliffs, rugged slopes, or tall trees beside water. Range is restricted to 5 – 10 miles of the nesting area. Listed for the protection of nesting colonies.	Not Present. Suitable habitat is not present on airport property.
Ferruginous Hawk *Buteo regalis*	SA	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. Listed for preservation of wintering habitat.	Low Potential. Suitable foraging habitat is present surrounding the project area. There are no known occurrences within five miles.
Golden Eagle *Aquila chrysaetos*	CFP, SA	Found in rolling foothills with open grasslands, scattered trees, and cliff-walled canyons. Nests on cliffs and in large trees in open areas. Listed for nesting habitat.	Not Present. Project site is in the Valley floor and does not contain the supporting nesting habitat.

Species	Status[1]	Habitat[1]	Potential for Occurrence
Grasshopper Sparrow *Ammodramus savannarum*	CSC	Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches. Builds nest of grasses and forbs in a slight depression in ground, hidden at base of an overhanging clump of grasses or forbs. Listed for loss of nesting/ breeding habitat.	Not Present. Wildlife management within the AOA eliminates potential nesting habitat. Lands surrounding the airport are all active in various agricultural farming practices which eliminate potential nesting habitat.
Great Blue Heron *Ardea herodias*	SA	Associated with estuaries, rivers, and oceans, the species is known to occur along major rivers in the Central Valley. A colonial nester, the species prefers tall trees beside water. The range is restricted to within 10 miles of the nesting area. Listed for the protection of nesting colonies.	Low Potential. The Sacramento River provides suitable habitat, but there are no known occurrences within two miles, nor will the project directly impact potential nesting habitat.
Great Egret *Ardea alba*	SA	Associated with estuaries, rivers, and oceans, the species is known to occur along major rivers in the Central Valley. A colonial nester, the species prefers cliffs, rugged slopes, or tall trees beside water. Listed for the protection of nesting colonies.	Low Potential. There is a recorded observance from 1989, but there are no other occurrences in the vicinity. There is marginal habitat north of Elverta Road.
Greater Sandhill Crane *Grus canadensis tabida*	ST	Listed for both nesting and wintering habitat, the species prefers open shortgrass plains, grain fields, and open wetlands for foraging, and typically nests within remote portions of extensive wetlands. The species does not nest in Sacramento County, but does winter in the County.	Low Potential. In Sacramento County, wintering populations are typically observed within the Cosumnes River floodplain, in areas of the Delta, and at the Stone Lakes National Wildlife Refuge. There are no known occurrences within a five-mile radius and are likely not present around the airport due to their sensitivity to humans.

Species	Status[1]	Habitat[1]	Potential for Occurrence
Loggerhead Shrike *Lanius ludovicianus*	CSC	Listed for loss of breeding habitat, the species places nests in large shrubs or trees. Breed mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground.	Moderate Potential. The land surrounding the airport provide suitable nesting and foraging habitat. The species has been observed at the airport in the past.
Northern Harrier *Circus cyaneus*	CSC	Frequents meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands. Harriers nest on the ground, mostly within patches of dense, often tall, vegetation in undisturbed areas. The species is listed for nesting.	Moderate Potential. The species has not been observed within the Airport Operations Area; however, suitable habitat is present north of Elverta Road and south of I-5.
Snowy Egret *Egretta thula*	SA	Listed for the protection of nesting colonies, the species is common in the Central Valley all year. Colonies will nest on either the ground, in marsh habitat, or at very low heights within trees (5 – 10 feet from the ground). Breeding season is from late April to late August.	Low Potential. There is a recorded observance from 1989, but there are no other occurrences in the vicinity. There is marginal habitat north of Elverta Road.
Swainson's Hawk *Buteo swainsoni*	ST	Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannah. Requires adjacent suitable foraging areas such as grasslands or grain fields supporting rodent populations.	Present. Swainson's hawk are known to nest and forage within airport property.
Tricolored Blackbird *Agelaius tricolor*	ST	The species is listed for breeding habitat. Known to nest near marshes in large (several hundred to several thousand birds) breeding colonies in habitat made up of blackberry thickets, bulrush (*Scrirpus* sp.) or cattails (*Typha* sp.) patches.	Moderate Potential. There are no known occurrences within the airport operations area, however, there is suitable habitat present within Himalayan blackberry shrubs north of Elverta Road.

Species	Status[1]	Habitat[1]	Potential for Occurrence
Western Yellow-Billed Cuckoo	FE (state candidate)	Inhabits extensive deciduous riparian thickets or forests with dense, low-level or understory foliage, and which abut on slow-moving watercourses, backwaters, or seeps.	Not Present. This segment of the Sacramento River is not within the species critical habitat. There is no suitable habitat present on airport property.
White-Tailed Kite *Elanus leucurus*	CFP, SA	Inhabit low-elevation grasslands, wetlands dominated by grasses, oak woodlands, and agricultural and riparian areas. The species is listed for nesting.	Moderate Potential. There is suitable habitat along the Sacramento River.
MAMMALS			
Pallid Bat *Antrozous pallidus*	CSC	A wide variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Maternity colonies form in early April, and may have a dozen to 100 individuals.	Low Potential. Suitable habitat exists along the Sacramento River 0.5-1.5 miles to the west and south.
Western Red Bat *Lasiurus blossevillii*	CSC	Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Young are born from May through early July.	Low Potential. Suitable habitat exists along the Sacramento River 0.5-1.5 miles to the west and south.
Yuma Myotis Bat *Myotis yumanensis*	SA	Optimal habitats are open forests and woodlands with sources of water over which to feed, but it is found in a variety of habitats. The species roosts in buildings, mines, caves, or crevices. Young are born from May to mid-June.	Low Potential. Suitable habitat exists along the Sacramento River 0.5-1.5 miles to the west and south.

Species	Status[1]	Habitat[1]	Potential for Occurrence
REPTILES			
Giant Garter Snake *Thamnophis gigas*	FT, ST	Endemic to valley floors of the Sacramento and San Joaquin Valleys. Prefers freshwater marsh and low gradient streams. Has adapted to rice agriculture, drainage channels, and irrigation ditches. Requires permanent water, emergent vegetation, and upland habitat for basking and cover.	Present. Occurrence have been observed all over the Natomas Basin. Suitable habitat is present on-site.
Western Pond Turtle *Emys marmorata*	CSC	Occurs in perennial ponds, lakes, rivers, and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter. Require some slack- or slow-water aquatic habitat. Nests upland, on unshaded south-facing slopes with friable soils that have a high percentage of clay or silt.	Moderate Potential. Western pond turtles are known to inhabit the Sacramento River and there is a direct connection to the river via the drainage channel north of Elverta Road. The nearest known occurrence is 0.5 miles to the west along the Sacramento River, #1216 documented in 2009.
AMPHIBIANS			
California Tiger Salamander *Ambystoma californiense*	FT, ST	Endemic to annual grasslands and valley-foothill habitats in California. Adults spend most time in subterranean refugia, particularly in ground squirrel burrows. Seasonal ponds or vernal pools are required for breeding.	Not Present. Project site is outside of species known range within the Sacramento Valley.
California Red-Legged Frog *Rana draytonii*	FT, CSC	Adults prefer dense, shrubby or emergent riparian vegetation near deep (at least two feet), still, or slow-moving water. The species aestivate in upland burrows and in leaf litter.	Not Present. The nearest confirmed, documented breeding population is located near Pollock Pines in El Dorado County (CNDDB occurrence 586). There are no occurrences documented in Sacramento County, and the species is considered extirpated in the Central Valley (USFWS, Recovery Plan for the California Red-legged Frog, 2002).

Species	Status[1]	Habitat[1]	Potential for Occurrence
Western Spadefoot Toad *Scaphiopus (Spea) hammondii*	CSC	Occurs primarily in grasslands but occasionally populates valley-foothill hardwood woodlands. Almost entirely terrestrial, but requires temporary rain pools that lack predators (fish, bullfrogs, crayfish) for breeding. Also needs burrows for refuge.	Not Present. Suitable breeding habitat is not present on the project site.
FISH			
Central Valley Spring-Run Chinook Salmon *Oncorhynchus tshawytscha*	ST, FT	Distribution occurs throughout the Sacramento River and through a portion of the American River, but the distribution maps do not include the Cosumnes River as habitat. (NMFS 2009) State listing is for runs in the Sacramento River, specifically. Federal listing is for the Sacramento River and its tributaries.	Not Present. Species is limited to the Sacramento River. Any stormwater runoff from the airport is confined to local canals and drainage ditches before it released in to the Sacramento River, which provides time for pollutant and sediments to filter out.
Central Valley Winter-Run Chinook Salmon *Oncorhynchus tshawytscha*	SE, FE	Distribution as above for spring-run salmon. Federal listing is for the Sacramento River, specifically. The state-listing application is unspecified.	Not Present. Species is limited to the Sacramento River. Any stormwater runoff from the airport is confined to local canals and drainage ditches before it released in to the Sacramento River, which provides time for pollutant and sediments to filter out.
Central Valley Steelhead *Oncorhynchus mykiss*	FT	Most of Sacramento County is within the distinct population segment area for this species. Critical habitat has been designated within Sacramento County on the Sacramento River, American River, Mokelumne River, and Dry Creek (both north and south creeks). Spawning has been documented on the Cosumnes River. (NMFS 2009) The listing applies to the Sacramento and San Joaquin Rivers and their tributaries.	Not Present. Species is limited to the Sacramento River. Any stormwater runoff from the airport is confined to local canals and drainage ditches before it is released in to the Sacramento River, which provides time for pollutants and sediments to filter out.

Species	Status[1]	Habitat[1]	Potential for Occurrence
Delta Smelt *Hypomesus transpacificus*	FT, SE	The delta smelt is a small, slender-bodied fish with a typical adult size of two to three inches that is found only in the Sacramento-San Joaquin Estuary. This species occurs in the Sacramento River as far upstream as the confluence with the American River. Delta smelt may also be found in the Cosumnes River and San Joaquin River.	Not Present. Species is limited to the Sacramento River. Any stormwater runoff from the airport is confined to local canals and drainage ditches before it is released in to the Sacramento River, which provides time for pollutants and sediments to filter out.
Green Sturgeon *Acipenser medirostris*	FT	Distribution occurs within the San Francisco Bay System, which includes the Delta. The species enters the Sacramento River to spawn, and has been observed as far north as Red Bluff. Spawning occurs from March to July.	Not Present. Species is limited to the Sacramento River. Any stormwater runoff from the airport is confined to local canals and drainage ditches before it is released in to the Sacramento River, which provides time for pollutants and sediments to filter out.
Longfin Smelt *Spirinchus thaleichthys*	ST	Distribution includes the Sacramento River below Rio Vista, and in the middle and lower Delta (below Medford Island).	Not Present. The species occurs in portions of the Sacramento River and the Delta which are not within Sacramento County.
Sacramento Splittail *Pogonichthys macrolepidotus*	CSC	The species prefers low-salinity, shallow-water habitat. The species is primarily found in the Delta, and are only rarely found in the main Sacramento River channel unless spawning. Spawning may occur in the Sacramento River below the Feather River confluence, and runs from late January through July.	Not Present. Species is limited to the Sacramento River. Any stormwater runoff from the airport is confined to local canals and drainage ditches before it is released in to the Sacramento River, which provides time for pollutants and sediments to filter out.

Species	Status[1]	Habitat[1]	Potential for Occurrence
INVERTEBRATES			
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	FT	Associated with mature elderberry (*Sambucus* spp.) trees/shrubs found in riparian forests in the Central Valley (USFWS, 1999).	Low Potential. There are known elderberry shrubs along the Sacramento River, known populations of VELB have been recorded to the south and west of the airport. There is a direct connection to the riparian vegetation north of Elverta Road; however, no project facilities are proposed near this area.
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	FT	Inhabit alkaline pools, ephemeral drainages, rock outcrop pools, ditches, stream oxbows, stockponds, vernal pools, vernal swales, and other seasonal wetlands. Also found in basalt flow depression pools in unplowed grasslands. [2]	Not Present. There are no vernal pools within the project area nor are there any known occurrences within the project vicinity.
Vernal Pool Tadpole Shrimp *Lepidurus packardi*	FE	Inhabits small to large vernal pools containing clear to highly turbid water. [2]	Not Present. There are no vernal pools within the project area.
PLANTS			
Sanford's Arrowhead *Sagittaria sanfordii*	List 1B	Marshes and swamps; elevation 0 – 2,000 ft (blooms May – Oct.)	Low Potential. The marsh area located north of Elverta Road does provide suitable habitat, but there are no known occurrences and recent surveys by Dudek did not observe any.
Suisun Marsh Aster *Aster lentus*	List 1B	Marshes and swamps; elevation 0 – 10 ft (blooms May – Nov.) In Sacramento County, found only in the Delta.	Low Potential. The marsh area located north of Elverta Road does provide suitable habitat, but there are no known occurrences and recent surveys by Dudek did not observe any.

Relevant species compiled from the California Dept. of Fish and Wildlife Natural Diversity Data Base (2020) and the U.S. Fish and Wildlife Species List for the Project Boundary

1. Listing status sources and, unless otherwise specified, habitat description sources (life history accounts) are:

California Species: https://wildlife.ca.gov/Conservation/SSC for the general webpage where you can use the links, or use the "search" field in the upper right-hand corner – for instance, enter "American Badger life history" – to obtain life history accounts. Most Bird Accounts are https://wildlife.ca.gov/Conservation/SSC/Birds, most Mammal Accounts are https://wildlife.ca.gov/Conservation/SSC/Mammals, most Fish Accounts are https://wildlife.ca.gov/Conservation/SSC/Fishes, and most reptile and amphibian accounts are https://wildlife.ca.gov/Conservation/SSC/Amphibians-Reptiles Last accessed October 20, 2020.

Federal Species: https://www.fws.gov/sacramento/es_species/Accounts/Last accessed January 17, 2019.

California Native Plant Society: http://www.rareplants.cnps.org/ Last accessed October 20, 2020.

2. United States Fish and Wildlife Service, "Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon", December 2005.

FE = Federal Endangered; FT = Federal Threatened; FC = Federal Candidate

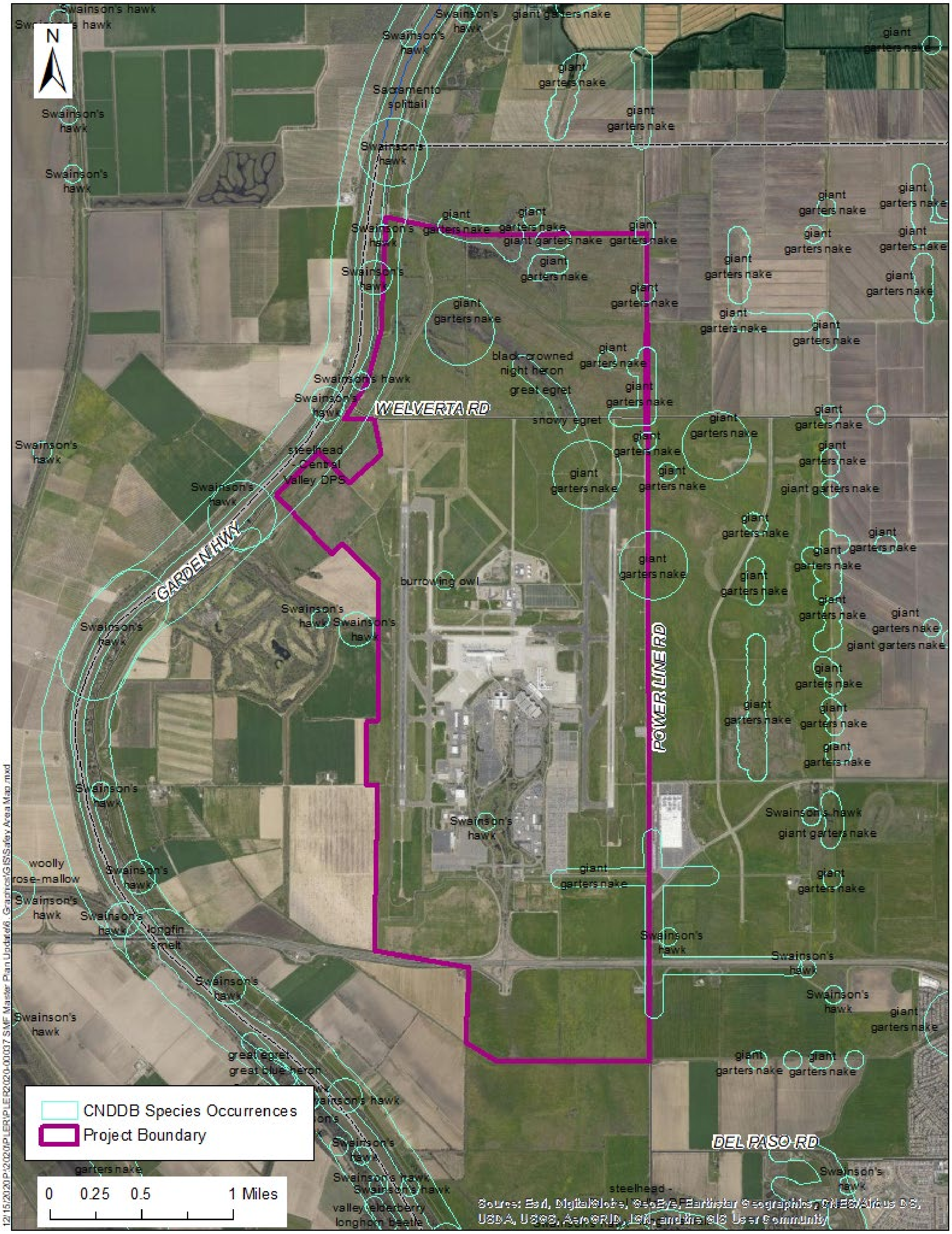
Species	Status[1]	Habitat[1]	Potential for Occurrence

SE = State of California Endangered; ST = State of California Threatened; CSC = State of California Species of Special Concern; CFP = State of California Fully Protected; SA = Special Animal

List 1B = California Native Plant Society Endangered, Threatened, or Rare in California

List 2 = California Native Plant Society Endangered, Threatened, or Rare in California but more common elsewhere

Plate BR-5: CNDDB Occurrence Map



BIRDS

Based on the species table and types of habitat present on or near the project site, the following special status avian species have been identified as having potential to occur on or near the project site: burrowing owl, Cooper's hawk, Swainson's hawk, northern harrier, and white-tailed kite. This section also addresses nesting raptors and migratory birds in general, which are afforded minimum protections pursuant to the California Fish and Game Code or the MBTA regardless of status.

SWAINSON'S HAWK

The Swainson's hawk (*Buteo swainsoni*) is listed as a threatened species by the State of California and is a candidate for federal listing as threatened or endangered. It is a migratory raptor typically nesting in or near valley floor riparian habitats during spring and summer months. Swainson's hawks were once common throughout the state, but various habitat changes, including the loss of nesting habitat (trees) and the loss of foraging habitat through the conversion of native Central Valley grasslands to certain incompatible agricultural and urban uses has caused an estimated 90% decline in their population.

Swainson's hawks feed primarily upon small mammals, birds, and insects. Their typical foraging habitat includes native grasslands, alfalfa, and other hay crops that provide suitable habitat for small mammals. Certain other row crops and open habitats also provide some foraging habitat. The availability of productive foraging habitat near a Swainson's hawk's nest site is a critical requirement for nesting and fledgling success. In central California, about 85% of Swainson's hawk nests are within riparian forest or remnant riparian trees. CEQA analysis of impacts to Swainson's hawks consists of separate analyses of impacts to nesting habitat and foraging habitat.

The CEQA analysis provides a means to ascertain impacts to the Swainson's hawk. When the analysis identifies impacts, mitigation measures are established that will reduce impacts to the species to a less than significant level. Project proponents are cautioned that the mitigation measures are designed to reduce impacts and do not constitute an incidental take permit under the CESA. Anyone who directly or incidentally takes a Swainson's hawk, even when in compliance with mitigation measures established pursuant to CEQA, may violate the CESA.

NESTING HABITAT IMPACT METHODOLOGY

For determining impacts to and establishing mitigation for nesting Swainson's hawks in Sacramento County, CDFW recommends utilizing the methodology set forth in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk TAC 2000). The document recommends that surveys be conducted for the two survey periods immediately prior to the *start of construction*. The five survey periods are defined by the timing of migration, courtship, and nesting in a typical year (refer to Table BR-4). Surveys should extend a ½-mile radius around all project activities, and if active nesting is identified, CDFW should be contacted.

Table BR-4: Recommended Survey Periods for Swainson's Hawk (TAC 2000)

Period #	Timeframe	# of surveys required	Notes
I.	Jan. 1 – Mar. 20	1	Optional, but recommended
II.	Mar. 20 – Apr. 5	3	
III.	Apr. 5 – Apr. 20	3	
IV.	Apr. 21 – June 10	N/A	Initiating surveys is not recommended during this period
V.	June 10 – July 30	3	

For example, if a project is scheduled to begin on June 20, three surveys should be completed in Period III and three surveys in Period V, as surveys should not be initiated in Period IV. It is always recommended that surveys be completed in Periods II, III and V.

FORAGING HABITAT IMPACT METHODOLOGY

Swainson's hawks are known to forage up to 18 miles from their nest site; however, that is the extreme range of one individual bird's daily movement. It is more common for a Swainson's hawk to forage within 10 miles of its nest-site. Therefore it is generally accepted and CDFW recommends evaluating projects for foraging habitat impacts when they are within 10 miles of a known nest site. Virtually all of Sacramento County is within 10 miles of a known nest.

Statewide, CDFW recommends implementing the measures set forth in the CDFW Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (November 1, 1994) for determining impacts to Swainson's hawk foraging habitat unless local jurisdictions develop an individualized methodology designed specifically for their location. Sacramento County has developed such a methodology and received confirmation from CDFW in May of 2006 that the methodology is a better fit for unincorporated Sacramento County and should replace the statewide, generalized methodology for determining impacts to foraging habitat.

Swainson's hawk foraging habitat value is greater in large expansive open space and agricultural areas than in areas which have been fragmented by agricultural-residential or urban development. The methodology for unincorporated Sacramento County is based on the concept that impacts to Swainson's hawk foraging habitat occur as properties develop to increasingly more intensive uses on smaller minimum parcel sizes. As part of methodology development, County and CDFW staff analyzed aerial photography of the County and compared this to the underlying zoning. It was determined that there was a strong correlation in most areas between the presence of suitable habitat and zoning for large agricultural parcels, and conversely that areas zoned for agricultural-residential or more dense uses tended to have fragmented or absent habitat. Therefore, the methodology relies mainly on the minimum parcel size allowed by zoning to determine habitat value. Exceptions include Rio Linda/Elverta and the Rancho Murieta areas, in which this methodology does not apply because there are very large parcels with high-quality habitat which are zoned A-2 or similar. Though there may be individual properties, which do not follow the observed regional trend, it was concluded that adherence to this methodology would result in adequate cumulative mitigation for the species.

For the purpose of the methodology, properties with zoning of AG-40 and larger are assumed to maintain 100% of their foraging habitat value and properties with AR-5 zoning and smaller are assumed to have lost all foraging habitat value. Table BR-5, below, illustrates the continuum between AG-40 and AR-5 that represents the partial loss of habitat value that occurs with fragmentation of large agricultural landholdings. The large, 50% loss of habitat value between AG-20 and AR-10 is due to the change in land use from general agriculture to agricultural-residential. The methodology does allow case-by-case analysis for projects with unique characteristics.

Table BR-5: Swainson's Hawk Foraging Habitat Value by Zoning Category

Zoning Category	Habitat Value Remaining
AG-40 and above (e.g., AG-80, 160 etc.)	100%
AG-20	75%
AR-10	25%
AR-5 and smaller (e.g., AR-2, 1 or RD-5, 7, 10, 15, 20 etc.)	0%

SWAINSON'S HAWK IMPACT MITIGATION PROGRAM

In 1997, in response to the need to mitigate for the loss of Swainson's hawk foraging habitat in Sacramento County, the Board of Supervisors adopted an ordinance that established a Swainson's Hawk Impact Mitigation Program (Chapter 16.130 of the Sacramento County Code). The Program has been amended several times; the latest amendment went into effect in December of 2009.

By adopting the Program, the Board of Supervisors found that "the most effective means of mitigation for the loss of suitable Swainson's hawk foraging habitat is the direct preservation, in perpetuity, of equally suitable foraging habitat on an acre-per-acre basis based on the project's determined acreage impact". On an individual basis, the acquisition of lands for habitat conservation may not always be feasible or prudent and many small, disconnected preserves do not benefit the species as well as large, connected preserve systems. Therefore, the ordinance provides for the establishment of impact mitigation fees, which in some circumstances, may be paid in lieu of providing habitat lands. These fees accumulate and are held in trust by the County until used for the acquisition of foraging habitat of a size large enough to be biologically and economically viable. The current fee is $12,925 per acre. In addition, there is a one-time administrative fee of $500. These fees may be amended from time to time to ensure they accurately reflect market-rate land prices.

Under the Swainson's Hawk Impact Mitigation Program, only projects which have an impact of less than 40 acres are eligible to pay fees. Projects impacting 40 acres or more of foraging habitat must provide land acceptable to CDFW and the County. Land can be provided in fee title or through conservation easement. The Sacramento County Office of Planning and Environmental Review (Planning) administers the Swainson's Hawk Impact Mitigation Program and more information on lands likely to be determined as acceptable replacement habitat can be found at their website Swainson's Hawk Ordinance (saccounty.net).

SWAINSON'S HAWK PROJECT IMPACTS

NESTING

There are historic nesting sites within the Airport boundary and adjacent to the Sacramento River. As presented in the Biological Resources Assessment, biologists conducted a total of nine surveys for nesting Swainson's hawks within one-half mile of the biological study area. Surveys were completed consistent with the 2000 Technical Advisory Committee (TAC) recommendations. Swainson's hawks were observed along Elverta Road (foraging and nesting) and north of the proposed northern commercial area. Hawks were also observed in the trees along the south side of I-5, in the area identified for commercial development.

Since there are Swainson's hawk nests within or adjacent to Airport property, nesting surveys will be required consistent with the TAC 2000 recommendations prior to new construction associated with the proposed Master Plan facilities. The purpose of the survey requirement is to ensure that construction activities do not agitate nesting hawks, potentially resulting in nest abandonment or other harm to nesting success. If Swainson's hawk nests are found, the developer is required to contact CDFW to determine what measures need to be implemented in order to ensure that nesting hawks remain undisturbed. The measures selected will depend on many variables, including the distance of activities from the nest, the types of activities, and whether the landform between the nest and activities provides any kind of natural screening. According to the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (November 1, 1994), the mitigation described above will ensure that impacts to nesting Swainson's hawk will be ***less than significant.***

FORAGING

There is grassland within the broader AOA (including the area from I-5 north to Elverta Road and in-between the runways); however, it is actively managed to discourage wildlife to reduce possible bird strikes and therefore is not considered suitable foraging habitat. The open grassland/agricultural land north of Elverta Road and South of I-5 is suitable foraging habitat and remains so until the proposed development is constructed.

The prior EIR evaluated foraging impacts to lands south of I-5. The County's methodology was applied and impacts were determined for Phase 1 (economy parking lot - 111 acres) and Phase 2 (commercial development - 79 acres). The EIR concluded that a total of 142.5 acres would be impacted (applying the 75% remaining habitat value according to the methodology); however, the adopted Mitigation Measure, BR-11, required preservation of 190 acres of foraging habitat. The mitigation was completed in December 2014 with a recordation of a Declaration of Covenants and Restrictions on 495 acres of County owned land south of I-5 adjacent to the Sacramento River. Of the 495 acres, 490 are suitable foraging habitat. The Covenants and Restrictions include the Swainson's Hawk Foraging Mitigation Plan prepared by County Airports (2008) and mitigates for both the 1992 East Terminal Project mitigation requirement of 270[3] acres and the 2007 Mitigation Measure BR-11 of 190 acres. In addition, the solar field construction project added 7.5 acres to the impacted acreages. As of this date, there is a surplus of 22.5 acres of protected foraging habitat.

The prior EIR only assessed impacts to foraging habitat for Phase 1 and 2. Therefore, only a portion of the land south of I-5 was assessed and no land north of Elverta Road was evaluated for impacts to Swainson's hawk foraging impacts. Even though land within the Airport Master Plan is not required to be rezoned for the proposed commercial development, the land will be developed with urban uses and will permanently remove foraging habitat for Swainson's hawk. Applying the County's methodology, all land north of Elverta Road is zoned AG-80 and retains 100% of its habitat value. A total of 135 acres are proposed for commercial development north of Elverta Road and will require 100% or 1:1 mitigation for impacts to Swainson's hawk foraging habitat.

Since the area south of I-5 has not been constructed, and PAL 4 is no longer within the scope of this analysis, it is reasonable to transfer the 190 acres mitigated through mitigation measure BR-11 and apply it to the area north of Elverta Road if such development occurs first. Regardless, the total surplus of County-owned Swainson's hawk mitigation land (22.5 acres) could be applied towards the commercial development north of Elverta Road (PAL 3). Prior to commercial development north of Elverta Road (PAL 3), a total of 135 acres of foraging habitat will require mitigation. Since the project is impacting over 40 acres, the County's Swainson's Hawk Impact Mitigation Program cannot be used. Mitigation can be accomplished by transferring current mitigation acres applied to south of I-5 or implementing a mitigation plan acceptable to CDFW and the County. Mitigation should take place within the Natomas Basin, preferably contiguous with other preserve lands. Mitigation Measure BR-3 that compensates for the loss of Swainson's hawk foraging habitat will reduce singular and cumulative impacts to ***less than significant levels***.

[3] Airports mitigated for the 270 acres on a single parcel south of I-5, but was located within the 10,000 foot FAA-designated Safety zone and is no longer able to serve as mitigation land pursuant to FAA policies.

<u>NESTING RAPTORS</u>

Raptors are defined as members of the order Falconiformes (vultures, eagles, hawks, and falcons) and the order Strigiformes (owls). Common species of raptors found locally include Cooper's hawk (*Accipiter cooperii*) red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), Northern Harrier (*Circus cyaneus*), barn owl (*Tyto alba*), and great horned owl (*Bubo virginianus*).

Raptors and their active nests are protected by the California Fish and Game Code Sections 3503.5, 3511, and 3513. The Code states the following: "It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird." Because most raptors migrate they are also protected by the Federal Migratory Bird Treaty Act of 1918, which states "unless and except as permitted by regulations, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill" a migratory bird. Section 3(18) of the Federal Endangered Species Act defines the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Causing a bird to abandon an active nest may cause harm to egg(s) or chick(s) and is therefore considered "take."

The project area predominantly contains open agricultural field, riverine woodlands, and open urban development. Mature trees of sufficient size to support tree-nesting raptors are located along the Sacramento River and scattered along the ditches and canals traversing the Basin. Raptors, in general, build nests in large mature trees; though there are some ground-nesting species such as the northern harrier and the burrowing owl (refer to species-specific discussions, below).

Since the project area may provide suitable tree or ground-nesting habitat, particularly north of Elverta Road south of I-5, construction activities may impact nesting raptors if they occur within 500 feet of suitable nesting trees; 500 feet is the buffer used by Sacramento County and other nearby jurisdictions as a screening tool, and has been accepted by CDFW. To avoid impacts to tree-nesting raptors, mitigation is recommended requiring pre-construction nesting surveys. The purpose of the survey requirement is to ensure that construction activities do not agitate nesting raptors, potentially resulting in nest abandonment or other harm to nesting success. If raptor nests are found, the applicant is required to contact CDFW to determine what measures need to be implemented in order to ensure that nesting raptors remain undisturbed. The measures selected will depend on many variables, including the distance of activities from the nest, the types of activities, whether the landform or built environment between the nest and activities provides any kind of natural screening, and other variables.

If no nesting raptors are observed, no further mitigation will be required. For this project, construction activities associated with building construction may take place over multiple years and likewise every time the field training area is rotated, nesting surveys will need to be completed.

With implementation of recommended Mitigation Measure BR-4, impacts to nesting raptors are ***less than significant***.

WESTERN BURROWING OWL

According to the CDFW life history account for the species, burrowing owl (*Athene cunicularia*) habitat can be found in annual and perennial grasslands, deserts, and arid scrublands characterized by low-growing vegetation. Burrows are the essential component of burrowing owl habitat. Both natural and artificial burrows provide protection, shelter, and nesting sites for burrowing owls. Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also use human-made structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls are listed as a California Species of Special Concern due to loss of breeding habitat.

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Breeding season is generally defined as spanning February 1 to August 31 and wintering from September 1 to January 31. Occupancy of suitable burrowing owl habitat can be verified at a site by detecting a burrowing owl, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year.

According to the CDFW "Staff Report on Burrowing Owl Mitigation" (March 2012), surveys for burrowing owl should be conducted whenever suitable habitat is present within 500 feet of a proposed impact area; this is also consistent with the "Burrowing Owl Survey Protocol and Mitigation Guidelines" published by The California Burrowing Owl Consortium (April 1993). Occupancy of burrowing owl habitat is confirmed whenever one burrowing owl or burrowing owl sign has been observed at a burrow within the last three years.

The CDFW Staff Report on Burrowing Owl Mitigation indicates that the impact assessments should address the factors which could impact owls, the type and duration of disturbance, the timing and duration of the impact, and the significance of the impacts. The assessment should also take into account existing conditions, such as the visibility and likely sensitivity of the owls in question with respect to the disturbance area and any other environmental factors which may influence the degree to which an owl may be impacted (e.g. the availability of suitable habitat).

Burrowing owls are known to use airport property between Elverta Road and Interstate 5. Past occurrences have been reported in the CNDDB, most recently one pair was recorded in 2006 along an irrigation canal in the northern portion of the AOA. One owl was observed during a field reconnaissance survey on February 22, 2006 along the Airport East Ditch.

Burrowing owls surveys were completed for the area covered by the Biological Resources Assessment prepared by Dudek. Numerous burrows were observed throughout the study area and follow-up surveys were conducted during the owls' active time (6am to 10am) in June and July 2020. Owls were not observed, nor was there evidence of owls (pellets, whitewash, feathers) around these burrows. The biologist further consulted with SCDA wildlife management staff inquiring if there have been owl sightings recently. SCDA staff confirmed that owls have not been observed and the AOA is actively managed to discourage wildlife use. The surveys completed only cover a small portion of SCDA property and are only valid for a short timeframe; however, it does assist in determining the potential for the species to be present. It is clear that habitat does exist within SCDA property, further, proposed development will occur over 20 years and suitable habitat or species location could change. Therefore, the adopted mitigation in the prior EIR is still applicable to this project, but it has been updated to reflect current survey methods. Implementation of mitigation measure BR-5 will ensure impacts are ***less than significant***.

WHITE-TAILED KITE

The white-tailed kite is a resident of coastal and valley lowlands, foraging near agricultural fields, grasslands, meadows, and emergent wetlands. Kites soar or hover about 100 feet from the ground in search of prey. They slowly descend vertically on prey with wings outstretched. Prey includes small rodents, occasionally some small birds, reptiles, amphibians, and insects. Kites construct nests of loosely piled sticks in the tops of dense oak or willow trees near foraging areas.

The project study area includes habitat types that are suitable for foraging and nesting white-tailed kites. These habitat types consist of agricultural fields and freshwater marshland. Nesting habitat includes riparian trees found north of Elverta Road and oak woodland found along the Sacramento River. The nearest nesting occurrence reported in the CNDDB was in 2002 approximately 5.5 miles east of the project study area along the railroad tracks in a valley oak tree.

Construction of the proposed commercial development will result in the loss of foraging habitat for white-tailed kite which will be a significant impact. The white-tailed kite foraging habitat requirements overlap with Swainson's hawk foraging habitat requirements; therefore, implementation of mitigation measures for the loss of Swainson's hawk foraging habitat will reduce the impact to white-tailed kite foraging habitat to ***less than significant***. Consequently, no specific mitigation will be required for the white-tailed kite.

LOGGERHEAD SHRIKE

According to the CDFW Life History Account for the loggerhead shrike (*Lanius ludovicianus*), it is a resident of much of California's lowlands and foothills, and has a breeding range that extends from southern Canada to southern Mexico. The shrike feeds mostly on large insects, but will feed occasionally on small mammals, reptiles, fish, and crustaceans. Foraging habitat includes open areas with sparse shrubs and trees for perching. Loggerhead shrikes prefer open habitat characterized by grasses interspersed with shrubs or low trees, although they occur in a wide variety of habitats such as prairies, grazed grasslands, fencerows of agricultural fields, riparian areas, open woodlands, suburban areas, mowed roadsides, and golf courses. They prefer edge habitat and frequently nest along roadsides and hedgerows in agricultural areas. They prefer tree species with thorns on which they impale their prey. The bird is very territorial through the non-breeding season defending its foraging and perching areas. The loggerhead shrike nests from March to August building its nest in well-concealed brush or trees. The species is listed as a California Species of Special Concern due to loss of nesting habitat.

Open wooded areas on the north and west side of the airport and agricultural fields provide suitable foraging habitat for the loggerhead shrike and the species has been observed on airport property. Construction of the commercial development will result in the loss of foraging habitat for loggerhead shrike which will be a significant impact. The loggerhead shrike foraging habitat requirements overlap with Swainson's hawk foraging habitat requirements; therefore, implementation of mitigation measures for the loss of Swainson's hawk foraging habitat will reduce the impact to loggerhead shrike foraging habitat to ***less than significant***. Consequently, no specific mitigation will be required for the loggerhead shrike.

TRICOLORED BLACKBIRD

The tricolored blackbird (*Agelaius tricolor*) is protected under the California Fish and Game Code (Sections 3503 and 3800). In March of 2019 tricolored blackbird was listed as a State threatened species under the California Endangered Species Act.

Reasons for decline of tricolored blackbird populations include loss of nesting and foraging habitat. According to the CDFW Life History Account for the tricolored blackbird (*Agelaius tricolor*), the species is mostly a resident in California, and common locally throughout the Central Valley. The species is a colonial nester which breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs. Nesting colonies usually support a minimum of 50 pairs. The species feeds in grassland and cropland habitats. The usual breeding season is mid-April into late July.

The project study area includes freshwater marsh areas, ditches, and grassy areas that are suitable for foraging tricolored blackbirds. Freshwater marsh north of Elverta Road offers suitable nesting habitat, and ditches and canals that have not been recently cleared of cattails and tules also provide potential nesting habitat for this species.

No tricolored blackbirds have been observed during biological field surveys of the project study area and the nearest known CNDDB occurrence is located 2.5 miles east of the project study area where the species was observed in 1992 nesting in willows along an irrigation ditch adjacent to rice fields. There is suitable habitat for nesting north of Elverta Road and large numbers of red-winged blackbirds (*Agelaius phoeniceus*) were observed north of Elverta Road during field surveys conducted by Mr. Jason Pearson of URS Corporation in January 2007. Because tricolored and red-winged blackbirds share similar nesting habitat, it is possible that tricolored blackbirds could use the blackberry patches and willows growing along ditches and swales north of the existing alignment of Elverta Road.

The large swaths of riparian and marsh habitats north of Elverta Road will not be directly impacted by the proposed commercial development identified in PAL 3;

however, construction noise and removal of patches of tulles and blackberries growing in the drainage ditches may result in the disturbance to, or loss of suitable nesting for tricolored blackbirds. This is a potentially significant impact.

In order to reduce potential impacts to nesting tricolored blackbirds, mitigation measures have been included. Equipment operation and noise associated with construction activities may disturb nesting birds. If construction activities are proposed during the breeding season (March 1 through July 31) pre-construction surveys shall be conducted where suitable nesting habitat is present within 300 feet of the Project site. If tricolored blackbirds are found nesting within 300 feet of the survey area, the California Department of Fish and Wildlife shall be contacted and appropriate avoidance and impact minimization measures shall be implemented. This may include establishing a buffer or postponing construction until fledging of all nestlings (about July 31). Specific measures cannot be outlined at this time, because the extent and type of measures required are highly situational, depending on distance to the nest, the number of nesting individuals, the type of nesting substrate, and other factors. If no tricolored blackbirds are found during the pre-construction survey, no further mitigation would be required. With implementation of the recommended mitigation measure BR-6, impacts to tricolored blackbirds are ***less than significant***.

Mitigation Measures:

BR-2 Initiation of ground disturbance (clearing and grubbing, grading, or construction) for any proposed construction project shall be conducted between September 15 and March 1. If new disturbance must be conducted during the nesting season, March 1 to September 15, a focused survey for Swainson's hawk nests on the site and within ½ mile of the site shall be conducted by a qualified biologist in accordance with the Swainson's Hawk Survey Protocol outlined in the Swainson's Hawk Technical Advisory Committee 2000 paper. Note that multiple surveys may be required depending on the timing of the surveys. If active nests are found, a qualified biologist shall be retained to prepare a site-specific take avoidance plan that proposes measures to comply with the California Endangered Species Act and the Fish and Game Code, and these measures shall be implemented prior to the start of any ground-disturbing activities. Measures may include but are not limited to nest-specific no disturbance buffers, biological monitoring, rescheduling project activities around sensitive periods for the species (e.g. nest establishment), or implementation of construction best practice such as staging equipment out of the species' line of sight from the nest tree. In the event take of Swainson's hawk cannot be avoided, the project proponent may seek related take authorization as provided by Fish and Game Code. If no active nests are found during the focused survey, no further mitigation will be required.

BR-3 Prior to any development north of Elverta Road as shown in PAL 3, such as clearing or grubbing, the issuance of any permits for grading, building, or other site improvements, implement one of the following options to mitigate for the loss of up to 135 acres of Swainson's hawk foraging habitat on the project site:

a. The project proponent shall utilize one or more of the mitigation options (land dedication and/or fee payment) established in Sacramento County's Swainson's Hawk Impact Mitigation Program (Chapter 16.130 of the Sacramento County Code).

b. The project proponent shall, to the satisfaction of the California Department of Fish and Wildlife, prepare and implement a Swainson's hawk mitigation plan that will include preservation of Swainson's hawk foraging habitat.

c. The project proponent may transfer the mitigation acres allocated for the proposed development south of I-5 through the 2007 Mitigation Measure BR-11 to PAL 3 developments north of Elverta Road.

BR-4 If construction activity (which includes clearing, grubbing, or grading) is to commence within 500 feet of suitable nesting habitat between February 1 and September 15, a survey for raptor nests shall be conducted by a qualified biologist. The survey shall cover all potential tree, ground, or manmade (e.g. utility poles) suitable nesting habitat on-site and off-site up to a distance of 500 feet from the project boundary. The survey shall occur within 15 days of the date that project activities will encroach within 500 feet of suitable habitat. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity. If no active nests are found during the survey, no further mitigation will be required.

If any active nests are found, the Environmental Coordinator and a site-specific take avoidance plan that purposes measures to comply with the Fish and Game Code shall be prepared in consultation with a qualified biologist. The avoidance/protective measures shall be implemented prior to the commencement of construction within 500 feet of an identified nest. Measures may include but are not limited to nest-specific no disturbance buffers, biological monitoring, rescheduling project activities around sensitive periods for the species (e.g. nest establishment), or implementation of construction best practice such as staging equipment out of the species' line of sight from the nest tree. If a lapse in project-related work of 15 days or longer occurs, the qualified biologist shall perform a new focused survey, and if nests are found, perform the tasks described in this measure.

BR-5 Prior to ground disturbance (which includes clearing, grubbing, or grading) within 500 feet of suitable burrow habitat, a survey for burrowing owl shall be conducted by a qualified biologist. The survey shall occur within 30 days of the date that construction will encroach within 500 feet of suitable habitat. Surveys shall be conducted in accordance with the following:

1. A survey for occupied burrows and owls should be conducted by walking through suitable habitat over the area to be disturbed and in areas within 150 meters (~500 feet) of the project impact zone.
2. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (~100 feet), and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To efficiently survey projects larger than 100 acres, it is recommended that two or more surveyors conduct concurrent surveys. Surveyors should maintain a minimum distance of 50 meters (~160 feet) from any owls or occupied burrows. It is important to minimize disturbance near occupied burrows during all seasons.
3. If no occupied burrows or burrowing owls are found in the survey area, a letter report documenting survey methods and findings shall be submitted to the Environmental Coordinator and no further mitigation is necessary.
4. If occupied burrows or burrowing owls are found, then a complete burrowing owl survey is required. This consists of a minimum of four site visits conducted on four separate days, which must also be consistent with the Survey Method, Weather Conditions, and Time of Day sections of Appendix D of the California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012). Submit a survey report to the Environmental Coordinator which is consistent with the Survey Report section of Appendix D of the California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012).
5. If occupied burrows or burrowing owls are found the applicant shall contact the Environmental Coordinator and confer with California Fish and Wildlife prior to construction, and will be required to submit a Burrowing Owl Mitigation Plan (subject to the approval of the Environmental Coordinator and in consultation with California Fish and Wildlife). This plan must document all proposed measures, including avoidance, minimization, exclusion, relocation, or other measures, and include a plan to monitor mitigation success. The California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012) shall be followed in the development of the mitigation plan.

BR-6 If construction activity (which includes clearing, grubbing, or grading) is to commence within 300 feet of suitable tricolored blackbird nesting habitat between March 1 and July 31, a survey for nesting tricolored blackbirds shall be conducted by a qualified biologist. The survey shall cover all potential nesting habitat on-site and off-site up to a distance of 300 feet from the project boundary. The survey shall occur within 30 days of the date that construction will encroach within 300 feet of suitable habitat. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity. If no tricolored blackbird were found during the pre-construction survey, no further mitigation would be required. If an active tricolored blackbird colony is found on-site or within 300 feet of the project site the project proponent shall do the following:

1. Consult with the California Department of Fish and Wildlife to determine if project activity will impact the tricolored blackbird colony(s). Provide the Environmental Coordinator with written evidence of the consultation or a contact name and number from the California Department of Fish and Wildlife. Implement all protective measures recommended by the California Department of Fish and Wildlife.

2. With the California Department of Fish and Wildlife permission, the applicant may avoid impacts to tricolored blackbird by establishing a 300-foot temporary setback, with fencing that prevents any project activity within 300 feet of the colony. A qualified biologist shall verify that setbacks and fencing are adequate and will determine when the colonies are no longer dependent on the nesting habitat (i.e. nestling have fledged and are no longer using habitat). The breeding season typically ends in July.

3. If tricolored blackbird habitat is permanently destroyed follow the California Department of Fish and Wildlife procedure to mitigate for habitat loss, and submit documentation of the mitigation to the Environmental Coordinator.

REPTILES

GIANT GARTER SNAKE

The following discussions are based on the Programmatic Formal Consultation[4] published for the giant garter snake (*Thamnophis gigas*). Endemic to wetlands in the Sacramento and San Joaquin valleys, the giant garter snake inhabits marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals and rice fields. During the day the snake basks in the sun in emergent vegetation of tules and cattails and finds refuge during extreme heat in animal burrows or water. The snake rarely leaves aquatic areas. Upland areas surrounding aquatic areas are typically used only for overwintering and short periods of time to avoid storm water flooding, molting, and basking (USFWS 1997). Essential habitat components consist of (1) adequate water during the snake's active period (i.e., early spring through mid-fall) to provide a prey base and cover, (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat; (3) upland habitat for basking, cover, and retreat sites; and (4) high elevation uplands for cover and refuge from floodwaters. Giant garter snakes

[4] United States Fish and Wildlife Service. November 13, 1997. Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California.

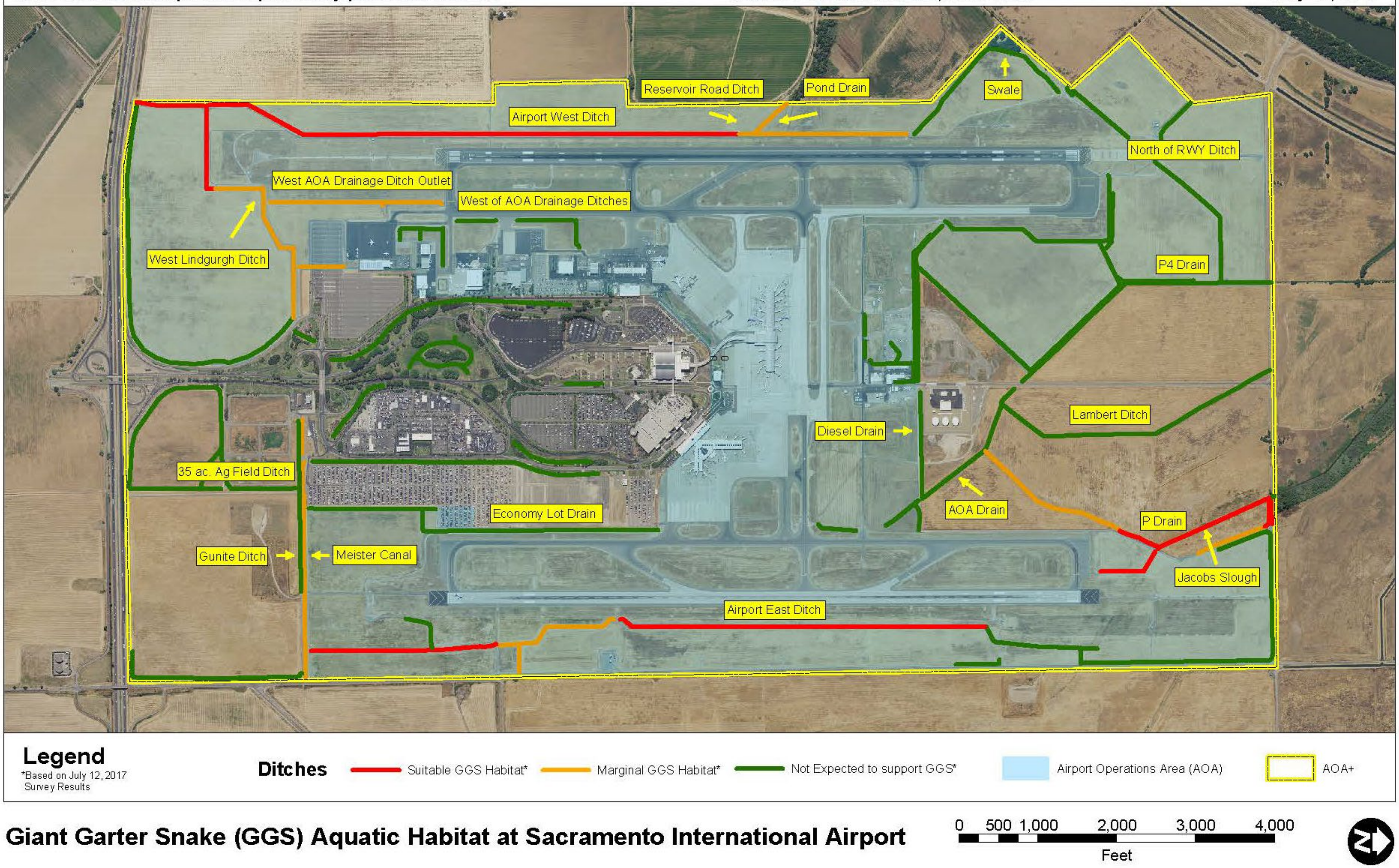
are typically absent from larger rivers and other water bodies that support introduced populations of large, predatory fish, and from wetlands with sand, gravel, or rock substrates. Riparian woodlands do not provide suitable habitat because of excessive shade, lack of basking sites, and absence of prey populations.

Historically the giant garter snake occupied much of the Natomas Basin in a variety of freshwater marsh habitat that was a part of the Sacramento River and American River floodplains. The conversion of land to agriculture, residential, and industrial land uses has modified the habitats that are available to the snakes. The giant garter snake has adapted to the marsh-like habitat associated with the numerous drainage ditches and rice fields throughout the basin (USFWS 1999).

The Biological Resources Assessment prepared by Dudek for the proposed cargo facility development during PAL 1, evaluated the potential impacts to giant garter snake. Eric Hansen, consulting Environmental Biologist, surveyed the study area for snake presence and potential dispersal corridors, including the collection of DNA. The report includes results of prior occupancy analyses conducted within the Natomas Basin (Hansen *et al*. 2017). The results of the study identified 62,303 linear feet of potential aquatic habitat, of which 12,225 linear feet were deemed suitable, 21,708 linear feet were deemed marginal and 28,370 linear feet were deemed unsuitable within the study area. The occupancy data, and patterns of spatial and temporal distribution suggest that occurrence is most likely within the northern, southern and eastern extents of the project area. The area within the AOA is low due to habitat value and occurrences. The study area is only a portion of the Master Plan area and for all remaining land, the prior GGS survey and assessment prepared by Eric Hansen in 2017, remains valid. The aquatic features and corresponding habitat value are shown in plates Plate BR-6 through Plate BR-8.

Plate BR-6: GGS Aquatic Habitat Map 2017

Note: This exhibit replaces all previously published exhibits | Source: Eric Hansen 2017, NAIP 2016 | July 12, 2017



Giant Garter Snake (GGS) Aquatic Habitat at Sacramento International Airport

Plate BR-7: GGS Aquatic Habitat Map 2020

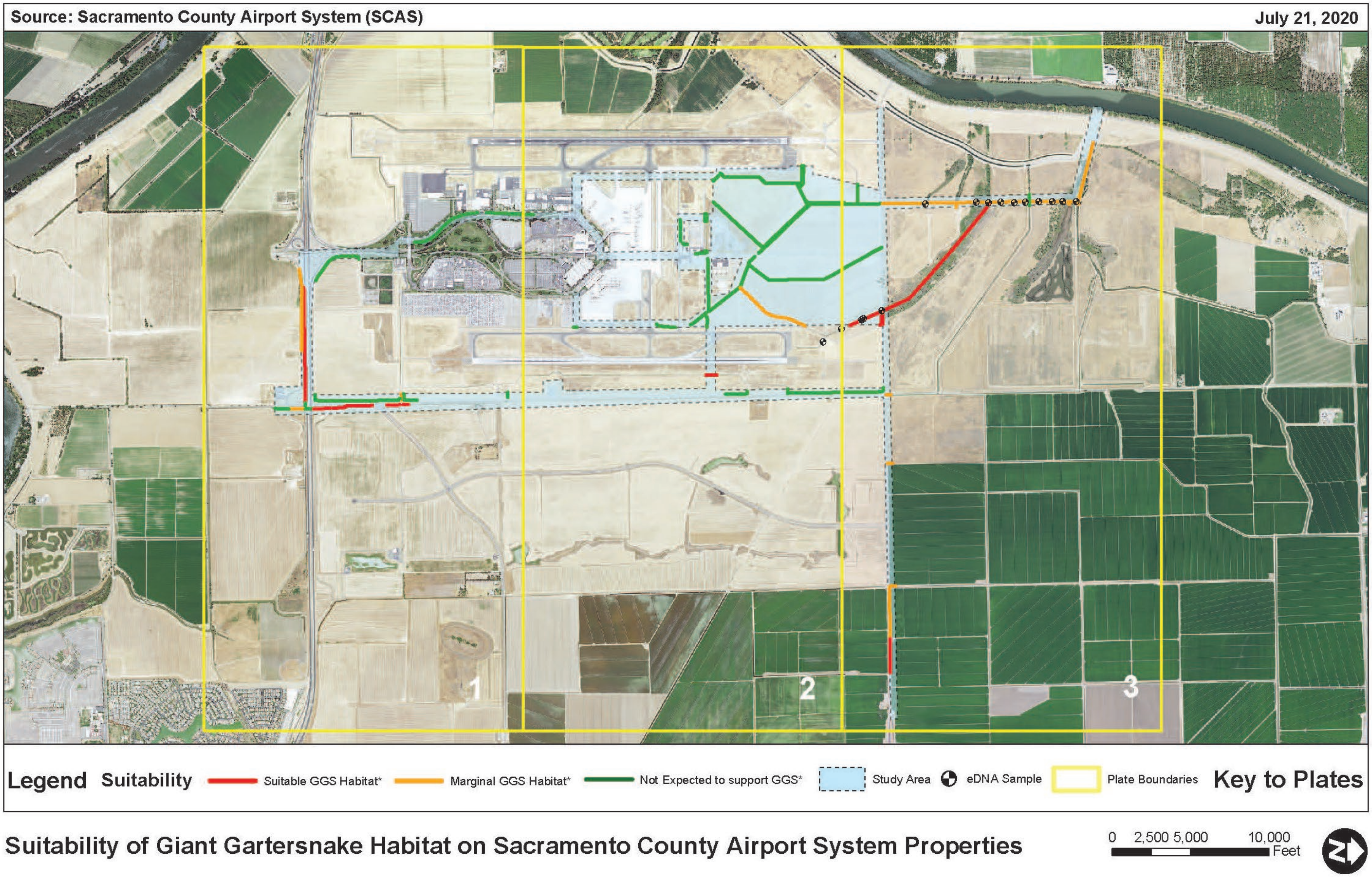
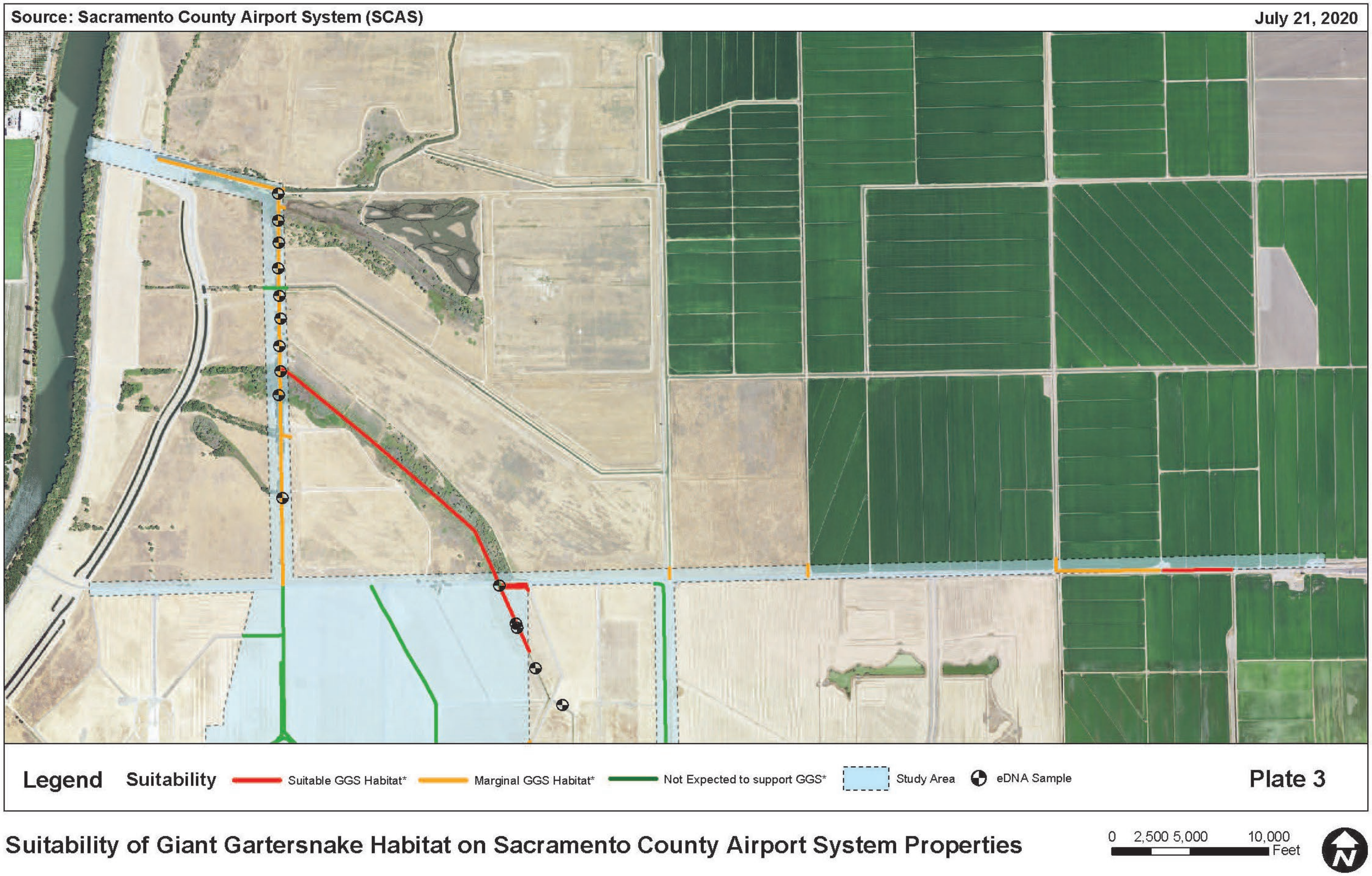


Plate BR-8: GGS Aquatic Habitat Map 2020 (close up of northern section)



The Programmatic Formal Consultation defines giant garter snake habitat as two acres of upland for every one acre of aquatic habitat – or put another way, it encompasses the water plus 200 feet of upland on either side. This establishes that a 200-foot setback from aquatic habitat must be implemented in order to achieve complete avoidance. If this is not possible, an applicant with relatively small impacts, categorized as Level 1, 2, or 3 may rely on the compensation requirements of the Programmatic Formal Consultation. The compensation measures are described in Table BR-6. The applicant will also be required to implement the following avoidance and minimization measures:

- Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the USFWS's Sacramento office to determine if additional measures are necessary to minimize and avoid take.
- Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as Environmentally Sensitive Areas. This area should be avoided by all construction personnel.
- Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).
- 24-hours prior to construction activities, the project area should be surveyed for giant garter snakes. Survey of the project area should be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the USFWS.
- Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

Table BR-6: Summary of Giant Garter Snake Conservation Measures

Impact Level	Impacts: Duration	Impacts: Acres	Conservation Measure
LEVEL 1	1 season	Less than 20 and temporary	Restoration
LEVEL 2	2 season	Less than 20 and temporary	Restoration plus 1:1 replacement
LEVEL 3	More than 2 seasons and temporary	Less than 20 and temporary	3:1 replacement (or restoration plus 2:1 replacement)
	Permanent loss	Less than 3 acres total giant garter snake habitat AND less than 1 acre aquatic habitat OR less than 218 linear feet bank habitat	3:1 replacement

The project will impact GGS aquatic habitat. The following potential impacts have been identified:

- Elverta Road improvements for the proposed cargo facility (PAL 1)
- Economy lot expansion (PAL 2)
- Taxiway A reconfiguration (PAL 2)
- Landscape maintenance building (PAL 2)
- Commercial development within AOA (PAL 3)
- Commercial development north of Elverta Road (PAL 3)
- Culvert ditches (PAL 1-3)

Impacts may be temporary where the proposed project is within 200 feet of suitable or marginal aquatic habitat, or they may be permanent associated with filling or culverting the aquatic feature. PAL 2 and 3 may impact up to two acres of marginal habitat (DD-2, 7, 9, 17 and DD-22 (north Elverta)).

Compensatory mitigation for giant garter snake habitat impacts will take place as PALs of the Master Plan project become ready for implementation, beginning with PAL 1. Consultation with the USFWS and CDFW will be required for any ground disturbance of suitable or marginal aquatic habitat and all uplands within 200 feet of these features. At a minimum, avoidance and minimization measures pursuant to Programmatic Consultation Guidelines, must be implemented; however, additional avoidance and minimization measures may be determined through the consultation process.

The proposed project is not expected to impact dispersal corridors for giant garter snakes within the Natomas Basin. None of the ditches impacted by the project between Elverta Road and I-5 provide important dispersal corridors. The proposed commercial development north of Elverta Road may potentially impact aquatic and upland habitat associated with the possible filling of drainage ditch DD-8 (aka P-Drain), considered marginal habitat.

The loss of giant garter snake habitat resulting from project construction will be a significant impact. The adopted mitigation in the prior EIR is still applicable to this project, but it has been updated to reflect current survey methods. Implementation of Mitigation Measure BR-7 will ensure impacts are ***less than significant***.

WESTERN POND TURTLE

The western pond turtle (*Emys marmorata*)[5], is listed as a California Species of Special Concern by CDFW. According to the CDFW Life and History Account for the species, the western pond turtle is an aquatic turtle that usually leaves the aquatic site to reproduce, aestivate, or overwinter. Western pond turtles require some slack- or slow-water aquatic habitat. High-gradient streams with minimal cover or basking habitat are not suitable. In pond environments the species typically only leaves the water to reproduce, whereas in stream environments the turtles more commonly leave the water to aestivate or overwinter, in addition to leaving for reproduction. Turtles leave the water to overwinter in October or November, and typically become active in March or April. Mating typically occurs in late April or early May, but may occur year-round. Most egg-laying occurs in May or June, but may occur as early as April or as late as August. The hatchlings remain in the nest over the winter, and emerge in the spring. Suitable nesting locations have dry soils (usually in a substrate with a high clay or silt fraction) on a slope that is unshaded and may be at least partially south-facing. The nest site can be up to 1,300 feet from the aquatic habitat, but it is more typical for the nest to be within 650 feet of aquatic habitat. The Life History Account conservatively recommends a buffer of 1,650 feet to ensure that neither adults nor nests will be impacted. During surveys conducted for other species in the limited survey area, western pond turtles were not observed in the drainage ditches or canals. The marsh habitat north of Elverta Road is directly connected to the Sacramento River a does provide suitable habitat for western pond turtle. Eventual development of commercial uses north of Elverta identified in PAL 3 may encroach into the 1,650 foot recommended buffer and is considered a potentially significant impact.

The CDFW has not published mitigation or other regulatory guidance for the treatment of impacts to this species. As a result, mitigation is focused on preventing construction activities from resulting in direct mortality of a western pond turtle. The applicant will be required to perform surveys 24-hours prior to ground-disturbing activity to ensure that there are no western pond turtles within or near the construction area. Mitigation will ensure that no turtles are impacted during project construction. Impacts to western pond turtle are ***less than significant***.

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[5] The western pond turtle was identified as being comprised of two subspecies, one of which was the northwestern pond turtle (*Clemmys marmorata marmorata*). It is still listed as such in the Fish and Game Life History Account, as the account was written in 1994; however, the current special animals list clarifies that subsequent research has shown that the subspecies designations were not warranted, and the western pond turtle is now tracked only by species, not subspecies.

MITIGATION MEASURES:

BR-7 Prior to construction activities within 200 feet of the appropriate habitat on the project site, the applicant shall consult with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife regarding the giant garter snake and shall obtain any required permits. Unless otherwise indicated by permits or other documentation provided by the U.S. Fish and Wildlife Service, provide mitigation and protective measures consistent with those published in the Programmatic Consultation for the species ("Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California". 1-1-F-97-149. November 13, 1997.). Confine any ground disturbing activity (i.e. clearing, grubbing, grading, and excavation) in giant garter snake habitat to May 1st to October 1st (which is the snake's active period).

At a minimum the following avoidance and minimization measures shall be implemented;

- Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the USFWS's Sacramento office to determine if additional measures are necessary to minimize and avoid take.
- Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as Environmentally Sensitive Areas. This area should be avoided by all construction personnel.
- Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).
- 24-hours prior to construction activities, the project area should be surveyed for giant garter snakes. Survey of the project area should be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the USFWS.
- Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

BR-8 To avoid impacts to western pond turtles the following shall apply:

1. Twenty four hours prior to the commencement of ground-disturbing activity (i.e. clearing, grubbing, or grading) suitable habitat within the project area shall be surveyed for western pond turtle by a qualified biologist. The survey shall include aquatic habitat and 1,650 feet of adjacent uplands surrounding aquatic habitat within the project area. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity.
2. Construction personnel shall receive worker environmental awareness training. This training instructs workers how to recognize western pond turtles and their habitat.
3. If a western pond turtle is encountered during active construction, all construction shall cease until the animal has moved out of the construction area on its own or relocated by a qualified biologist. If the animal is injured or trapped, a qualified biologist shall move the animal out of the construction area and into a suitable habitat area. California Fish and Wildlife and the Environmental Coordinator shall be notified within 24-hours that a turtle was encountered.

Impact: Have A Substantial Adverse Effect On Any Riparian Habitat Or Other Sensitive Natural Community Identified In Local Or Regional Plan, Policies, Regulations, Or By The California Department Of Fish And Wildlife Or U.S Fish And Wildlife Service

Beyond the AOA, north of Elverta Road, the project area contains annual grasslands, agricultural lands, riparian woodlands, marsh and pasture. The roadway improvements associated with Elverta Road in PAL 1 may result in the removal of agricultural lands and isolated oak trees. The proposed commercial development identified in PAL 3 would not directly remove the larger swaths of riparian, marsh or valley oak woodland habitats. However, blackberry habitat and valley oak woodland habitat may be removed for development (reference Plate BR-4). The proposed project is designed to avoid the large, intact, riparian and woodland areas. The potential removal associated with commercial development north of Elverta Road would not substantially reduce the natural communities in and surrounding the project area. In addition, mitigation recommended later in this chapter for removal of native tree vegetation, would compensate for habitat removal. Impact is ***less than significant*.**

Mitigation Measures:

Reference BR-10.

Impact: Interfere Substantially With The Movement Of Any Native Resident Or Migratory Fish Or Wildlife Species Or With

Established Native Resident Or Migratory Wildlife Corridors, Or Impede The Use Of Native Wildlife Nursery Sites

The project is located within the Natomas Basin, which contains several wildlife corridors for a variety of species. The does not directly impact the Sacramento River to the west and south of the project. Therefore, the project will not substantially interfere with the movement of native resident or migratory fish.

As discussed in the individual species impact sections above, the project may remove giant garter snake transportation corridors through the filling of drainage ditches within the project area. The snake's dispersal corridors have been altered over the decades as urban development, including the airport, have expanded. The ditches in and around the airport are not high quality and are likely not used as a main transportation corridor. The project will not substantially interfere with established native resident wildlife corridors.

The project is located within the Pacific Flyway and there are hundreds of thousands of birds that pass through Sacramento Valley in a given year. Due to the potential conflicts from aircraft bird strikes, airport staff implement a Wildlife Hazard Management Plan to reduce this conflict. Regardless, it is impossible to prevent all migrating birds from utilizing the project area or immediately surrounding area. Commercial development north of Elverta Road may remove potential nesting habitat for migratory birds resulting in a potentially significant impact. Therefore, mitigation measure BR-9 is recommended to ensure migratory nesting birds are not disturbed. With recommended mitigation, impacts to migratory nesting birds is ***less than significant***.

Mitigation Measures:

BR-9 To Avoid impacts to nesting migratory birds the following shall apply:

1. If construction activity (which includes clearing, grubbing, or grading) is to commence within 50 feet of nesting habitat between February 1 and August 31, a survey for active migratory bird nests shall be conducted no more than 14 days prior to construction by a qualified biologist.
2. Trees slated for removal shall be removed during the period of September through January, in order to avoid the nesting season. Any trees that are to be removed during the nesting season, which is February through August, shall be surveyed by a qualified biologist and will only be removed if no nesting migratory birds are found.
3. If active nest(s) are found in the survey area, a non-disturbance buffer, the size of which has been determined by a qualified biologist, shall be established and maintained around the nest to prevent nest failure. All construction activities shall be avoided within this buffer area until a qualified biologist determines that nestlings have fledged, or until September 1.

IMPACT: CONFLICT WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES

NATIVE TREES

Sacramento County has identified the value of its native and landmark trees and has adopted measures for their preservation. The Tree Ordinance (Chapter 19.04 and 19.12 of the County Code) provides protections for landmark trees and heritage trees. The County Code defines a landmark tree as "an especially prominent or stately tree on any land in Sacramento County, including privately owned land" and a heritage tree as "native oak trees that are at or over 19" diameter at breast height (dbh)." Chapter 19.12 of the County Code, titled Tree Preservation and Protection, defines native oak trees as valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), blue oak (*Quercus douglasii*), or oracle oak (*Quercus morehus*) and states that "it shall be the policy of the County to preserve all trees possible through its development review process." It should be noted that to be considered a tree, as opposed to a seedling or sapling, the tree must have a diameter at breast height (dbh) of at least 6 inches or, if it has multiple trunks of less than 6 inches each, a combined dbh of 10 inches. The Sacramento County General Plan Conservation Element policies CO-138 and CO-139 also provide protections for native trees:

> CO-138. Protect and preserve non-oak native trees along riparian areas if used by Swainson's Hawk, as well as landmark and native oak trees measuring a minimum of 6 inches in diameter or 10 inches aggregate for multi-trunk trees at 4.5 feet above ground.
>
> CO-139. Native trees other than oaks, which cannot be protected through development, shall be replaced with in-kind species in accordance with established tree planting specifications, the combined diameter of which shall equal the combined diameter of the trees removed.

Native trees other than oaks include Fremont cottonwood (Populus fremontii), California sycamore (*Platanus racemosa*), California black walnut (*Juglans californica*), Oregon ash (*Fraxinus latifolia*), western redbud (*Cercis occidentalis),* gray pine (*Pinus sabiniana*), California white alder (*Alnus rhombifolia*), boxelder (*Acer negundo*), California buckeye (*Aesculus californica*), narrowleaf willow (*Salix exigua*), Gooding's willow (*Salix gooddingii*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), shining willow (*Salix lucida*), Pacific willow (*Salix lasiandra*), and dusky willow (*Salix melanopsis*).

NATIVE TREE PROJECT IMPACTS

There are native trees along Elverta Road east of the intersection of Earhart Drive. Depending on the extent of roadway improvements required for the proposed cargo facility (PAL 1), native trees may be removed. A tree inventory has not been completed for this area; therefore, the exact species, size and health of the trees are unknown. In order to comply with County General Plan policies, a tree inventory will be required prior to project development and plan approval.

Similarly, the area north of Elverta Road identified for commercial development during PAL 3 contains native trees. It is unknown at this time when or where improvements may take place. A tree inventory has not been completed for this area, and mitigation consistent with adopted policies and ordinances protecting native tree resources is recommended.

Where trees cannot be avoided in the proposed development areas, implementation of mitigation measures BR-10 and BR-11 will reduce impacts associated with native tree removal. However, since the final tree inventory and removal quantity is unknown, impacts remain ***potentially significan****t*.

MITIGATION MEASURES:

BR-10 Prior to project approval of Elverta Road Improvements associated with the cargo facility (PAL 1) and the commercial development north of Elverta Road (PAL 3), a tree inventory shall be completed which includes all native trees over six (6) inches in diameter at breast height must be inventoried including species, size, dripline radius, health condition within the proposed areas of impact. The removal of native trees shall be compensated for by planting in-kind native trees equivalent to the dbh inches lost, based on the ratios listed below, at locations that are authorized by the Environmental Coordinator. On-site preservation of native trees that are less than 6 inches (<6 inches) dbh, may also be used to meet this compensation requirement. Native trees include: valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), blue oak (*Quercus douglasii*), or oracle oak (*Quercus morehus*), California sycamore (*Platanus racemosa*), California black walnut (*Juglans californica*, which is also a List 1B plant), Oregon ash (*Fraxinus latifolia*), western redbud (*Cercis occidentalis),* gray pine (*Pinus sabiniana*), California white alder (*Alnus rhombifolia*), boxelder (*Acer negundo*), California buckeye (*Aesculus californica*), narrowleaf willow (*Salix exigua*), Gooding's willow (*Salix gooddingii*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), shining willow (*Salix lucida*), Pacific willow (*Salix lasiandra*), and dusky willow (*Salix melanopsis*).

Replacement tree planting shall be completed prior to approval of grading or improvement plans, whichever comes first.

Equivalent compensation based on the following ratio is required:

- one preserved native tree < 6 inches dbh on-site = 1 inch dbh
- one D-pot seedling (40 cubic inches or larger) = 1 inch dbh
- one 15-gallon tree = 1 inch dbh
- one 24-inch box tree = 2 inches dbh
- one 36-inch box tree = 3 inches dbh

Prior to the approval of Improvement Plans or Building Permits, whichever occurs first, a Replacement Tree Planting Plan shall be prepared by a certified arborist or licensed landscape architect and shall be submitted to the Environmental Coordinator for approval. The Replacement Tree Planting Plan(s) shall include the following minimum elements:

1. Species, size and locations of all replacement plantings and < 6-inch dbh trees to be preserved
2. Method of irrigation
3. If planting in soils with a hardpan/duripan or claypan layer, include the Sacramento County Standard Tree Planting Detail L-1, including the 10-foot deep boring hole to provide for adequate drainage
4. Planting, irrigation, and maintenance schedules;
5. Identification of the maintenance entity and a written agreement with that entity to provide care and irrigation of the trees for a 3-year establishment period, and to replace any of the replacement trees which do not survive during that period.
6. Designation of 20-foot root zone radius and landscaping to occur within the radius of trees < 6 inches dbh to be preserved on-site.

No replacement tree shall be planted within 15 feet of the driplines of existing native trees or landmark size trees that are retained on-site, or within 15 feet of a building foundation. The minimum spacing for replacement native trees shall be 20 feet on-center. Examples of acceptable planting locations are publicly owned lands, common areas, and landscaped frontages (with adequate spacing). Generally unacceptable locations are utility easements (PUE, sewer, storm drains), under overhead utility lines, private yards of single-family lots (including front yards), and roadway medians.

Native trees <6 inches dbh to be retained on-site shall have at least a 20-foot radius suitable root zone. The suitable root zone shall not have impermeable surfaces, turf/lawn, dense plantings, soil compaction, drainage conditions that create ponding (in the case of oak trees), utility easements, or other overstory tree(s) within 20 feet of the tree to be preserved. Trees to be retained shall be determined to be healthy and structurally sound for future growth, by an ISA Certified Arborist subject to Environmental Coordinator approval.

If tree replacement plantings are demonstrated to the satisfaction of the Environmental Coordinator to be infeasible for any or all trees removed, then compensation shall be through payment into the County Tree Preservation Fund. Payment shall be made at a rate of $325.00 per dbh inch removed but not otherwise compensated, or at the prevailing rate at the time payment into the fund is made.

BR-11 For the purpose of this mitigation measure, a native tree is defined as a those listed in Mitigation Measure BR-10 having a diameter at breast height (dbh) of at least 6 inches, or if it has multiple trunks of less than 6 inches each, a combined dbh of at least 10 inches.

With the exception of the trees removed and compensated for through Mitigation Measure BR-10, above, all native trees on the project site, all portions of adjacent off-site native trees which have driplines that extend onto the project site, and all off-site native trees which may be impacted by utility installation and/or improvements associated with this project, shall be preserved and protected as follows:

1. A circle with a radius measurement from the trunk of the tree to the tip of its longest limb shall constitute the dripline protection area of the tree. Limbs must not be cut back in order to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area of the tree. Removing limbs which make up the dripline does not change the protected area.
2. Chain link fencing or a similar protective barrier shall be installed one foot outside the driplines of the native trees prior to initiating project construction, in order to avoid damage to the trees and their root system.
3. No signs, ropes, cables (except cables which may be installed by a certified arborist to provide limb support) or any other items shall be attached to the native trees.
4. No vehicles, construction equipment, mobile home/office, supplies, materials or facilities shall be driven, parked, stockpiled or located within the driplines of the native trees.
5. Any soil disturbance (scraping, grading, trenching, and excavation) is to be avoided within the driplines of the native trees. Where this is necessary, an ISA Certified Arborist will provide specifications for this work, including methods for root pruning, backfill specifications and irrigation management guidelines.
6. All underground utilities and drain or irrigation lines shall be routed outside the driplines of native trees. Trenching within protected tree driplines is not permitted. If utility or irrigation lines must encroach upon the dripline, they should be tunneled or bored under the tree under the supervision of an ISA Certified Arborist.
7. If temporary haul or access roads must pass within the driplines of oak trees, a roadbed of six inches of mulch or gravel shall be created to protect the root zone. The roadbed shall be installed from outside of the dripline and while the soil is in a dry condition, if possible. The roadbed material shall be replenished as necessary to maintain a six-inch depth.
8. Drainage patterns on the site shall not be modified so that water collects or stands within, or is diverted across, the dripline of oak trees.

9. No sprinkler or irrigation system shall be installed in such a manner that it sprays water within the driplines of the oak trees.
10. Tree pruning that may be required for clearance during construction must be performed by an ISA Certified Arborist or Tree Worker and in accordance with the American National Standards Institute (ANSI) A300 pruning standards and the International Society of Arboriculture (ISA) “Tree Pruning Guidelines”.
11. Landscaping beneath the oak trees may include non-plant materials such as boulders, decorative rock, wood chips, organic mulch, non-compacted decomposed granite, etc. Landscape materials shall be kept two (2) feet away from the base of the trunk. The only plant species which shall be planted within the driplines of the oak trees are those which are tolerant of the natural semi-arid environs of the trees. Limited drip irrigation approximately twice per summer is recommended for the understory plants.
12. Any fence/wall that will encroach into the dripline protection area of any protected tree shall be constructed using grade beam wall panels and posts or piers set no closer than 10 feet on center. Posts or piers shall be spaced in such a manner as to maximize the separation between the tree trunks and the posts or piers in order to reduce impacts to the trees.

For a project constructing during the months of June, July, August, and September, deep water trees by using a soaker hose (or a garden hose set to a trickle) that slowly applies water to the soil until water has penetrated at least one foot in depth. Sprinklers may be used to water deeply by watering until water begins to run off, then waiting at least an hour or two to resume watering (provided that the sprinkler is not wetting the tree’s trunk. Deep water every 2 weeks and suspend watering 2 weeks between rain events of 1inch or more.

Impact: Conflict With The Provisions Of An Adopted Habitat Conservation Plan, Natural Community Conservation Plan, Or Approved Local, Regional, Or State Habitat Conservation Plan

The County of Sacramento is not a party to the Natomas Basin or Metro Air Park Habitat Conservation Plans. All of the project elements involving ground disturbing activities through 2038 will take place on existing County property. None of the land owned by the County is identified as potential mitigation land for the Natomas Basin or Metro Air Park Conservancies. The full build-out of the Master Plan will not impair the Conservancies’ ability of obtaining mitigation land.

Species mitigation is consistent with the habitat conservation plans and in some cases is more demanding, for example, County Swainson’s hawk mitigation requires compensatory mitigation greater than 0.5:1 acre. Species covered by the conservation plans have been included in this project’s species table.

All of the land north of I-5 disturbed by project activities is currently managed to minimize wildlife hazards to aircraft. The commercial development north of Elverta Road will result in the loss of approximately 135 acres of agricultural land and

Swainson's hawk foraging habitat. Mitigation for the habitat loss and land conversion is provided above in the Swainson's hawk discussion and in Chapter 8, Land Use, of this SEIR. This conversion will not interfere with implementation of the Natomas Basin or Metro Air Park Habitat Conservation Plans.

MITIGATION MEASURES:

None recommended.

5 CLIMATE CHANGE

INTRODUCTION

The Sacramento International Airport (SMF) has been in operation since 1967. The baseline greenhouse gas emissions include SMF's current operations and Master Plan elements that remain unchanged. The prior EIR certified in 2007 for the SMF Master Plan included a brief discussion regarding climate change in the Air Quality Chapter; however, CEQA thresholds had not been established and no significance determinations were made. This chapter focuses on potential greenhouse gas emissions impacts associated with the proposed changes to the Master Plan elements.

Similar to the Air Quality chapter, plans for the proposed cargo facility are currently under development; therefore, project specific impacts have been identified separately from the other changes to the Master Plan.

EMISSIONS SETTING

The principal greenhouse gases (GHGs) that enter the atmosphere because of human activities are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. From 1750 to 2004, concentrations of CO2, CH4, and N2O have increased globally by 35, 143, and 18 percent, respectively. Other greenhouse gases, such as fluorinated gases, are created and emitted solely through human activities. (EPA 2012) Carbon dioxide is the gas that is most commonly referenced when discussing climate change because it is the most commonly emitted gas. While some of the less common gases do make up less of the total greenhouse gases emitted to the atmosphere, some have a greater climate-forcing effect per molecule and/or are more toxic than carbon dioxide.

CARBON DIOXIDE

Carbon dioxide emissions are mainly associated with combustion of carbon-bearing fossil fuels such as gasoline, diesel, and natural gas used in mobile sources and energy-generation-related activities. The U.S. Environmental Protection Agency (EPA) estimates that CO_2 emissions accounted for 84.6% of greenhouse gas emissions in the United States in 2004 (EPA 2012). The California Energy Commission (CEC) estimates that CO_2 emissions account for 84% of California's anthropogenic (manmade) greenhouse gas emissions, nearly all of which is associated with fossil fuel combustion (CEC 2005). Total CO_2 emissions in the United States increased by 20% from 1990 to 2004 (EPA 2012).

METHANE

CH_4 has both natural and anthropogenic sources. Landfills, natural gas distribution systems, agricultural activities, fireplaces and wood stoves, stationary and mobile fuel combustion, and gas and oil production fields are the major sources of these emissions. The EPA estimates that CH_4 emissions accounted for 7.9% of total greenhouse gas emissions in the United States in 2004 (EPA 2012). The CEC estimates that CH_4 emissions from various sources represent 6.2% of California's total greenhouse gas emissions (CEC 2005). Total CH_4 emissions in the United States decreased by 10% from 1990 to 2004 (EPA 2012).

Nitrous Oxide

N_2O is produced by microbial processes in soil and water, including those reactions, which occur in fertilizers that contain nitrogen. Global concentration for N_2O in 1998 was 314 ppb, and in addition to agricultural sources for the gas, some industrial processes (fossil fuel fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load (EPA 2012).

The EPA estimates that N_2O emissions accounted for 5.5% of total greenhouse gas emissions in the United States in 2004 (EPA 2012). The CEC estimates that nitrous oxide emissions from various sources represent 6.6% of California's total greenhouse gas emissions (CEC 2005). Total N_2O emissions in the United States decreased by 2% from 1990 to 2004 (EPA 2012).

Fluorinated Gases (HFCs, PFCs, and SF_6)

Fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6), are powerful greenhouse gases that are emitted from a variety of industrial processes. The primary sources of fluorinated gas emissions in the United States include the production of HCFC-22, electrical transmission and distribution systems, semiconductor manufacturing, aluminum production, magnesium production and processing, and substitution for ozone-depleting substances. The EPA estimates that fluorinated gas (HFC, PFC, and SF_6) emissions accounted for 2.0% of total greenhouse gas emissions in the United States in 2004. (EPA 2012) The CEC estimates that fluorinated gas emissions from various sources represent 3.4% of California's total greenhouse gas emissions (CEC 2005). Total fluorinated gas emissions in the United States increased by 58% from 1990 to 2004 (EPA 2012).

Sacramento County Emissions

The ICLEI (Local Governments for Sustainability) Clean Air and Climate Protection Model was used to estimate unincorporated Sacramento County emissions, along with the emissions of all of the incorporated cities in the County. This complete inventory was done to provide a regional picture, but the County does not have control over incorporated city emissions (http://www.green.saccounty.net/Pages/GreenLinksandRescources.aspx). The baseline year 2005 was chosen based on availability of information. In cases where 2005 data was unavailable, 2006 or other recent-year data was substituted. The software inventories community GHG emissions for all operations, with a separate government analysis tab that determines GHG emissions of local government operations as a subset of the community analysis. The community analysis divides GHG emissions among residential (energy usage), commercial and industrial (energy usage), transportation (exhaust emissions), off-road vehicle use (exhaust emissions), waste (landfill emissions), wastewater treatment (energy usage), agriculture (fertilizers, enteric fermentation, etc), High GWP (high global warming potential, such are refrigerants), and airport (emissions from County buildings and fleets – does not include fleet owned by airlines) sectors. The government analysis divides emissions among buildings, vehicle fleet, employee commute, streetlights, water/sewage, and waste sectors.

For the community analysis, energy use was obtained for the Sacramento Municipal Utility District (SMUD) and the Pacific Gas and Electric Company (PG&E). Community waste generation for Sacramento County was collected through the California Integrated Waste Management Board web site and through consultation with staff of Sacramento County Municipal Services Agency. SMUD reported its 2005 GHG emissions and an emissions factor for all electricity sold to customers that was verified and certified by the California Climate Action Registry. This emissions factor was input into the model as a replacement for the statewide emissions factor for electricity consumption to generate more accurate GHG emissions estimates for Sacramento County electricity consumption. The analysis also uses localized vehicle miles traveled information using the outputs from the Sacramento Regional Travel Demand Model and the emissions factors from the Emission Factors Model 2007 (EMFAC 2007). The software default emissions factors for other GHGs, which are based on statewide averages, were used in all other instances.

As shown in Table CC-1, the County 2005 emission baseline is approximately 5.0 MMT per year, with the transportation sector as the largest contributor at 41% of the total. The emissions per sector drop precipitously from there, with the residential sector emitting only half of the transportation sector total. However, the residential and commercial sectors can be combined to give a more overarching view, because though these sectors operate differently, the source of emissions are the same: private building and interior equipment energy usage. Combining these sectors, transportation accounts for 40% of emissions, and operation of residential, commercial, and industrial buildings accounts for 36% of emissions. The off-road vehicle, waste, wastewater, water, agriculture, and high global warming potential greenhouse gases (High GWP GHG) sectors combined are responsible for only 20% of the County emissions, with the airport as an additional 4%.

Table CC-1: 2005 Community Emissions by Sector

Sector	CO_2e (metric tons)	Percent
Residential	1,033,142	20.7
Commercial and Industrial	772,129	15.4
Transportation	2,066,970	41.4
Off-Road Vehicle Use	236,466	4.7
Waste	201,350	4.0
Wastewater Treatment	70,662	1.4
Water-Related	5,885	0.1
Agriculture	197,132	4.0
High GWP GHGs	203,528	4.1
Airport	200,404	4.0
Total	**4,987,668**	**100**

REGULATORY SETTING

EXECUTIVE ORDER S-3-05

Executive Order S-3-05 was the precursor to Assembly Bill 32 (AB 32 is described in the next section) and was signed by Governor Schwarzenegger in June 2005. The Executive Order states that California is “particularly vulnerable” to the impacts of climate change, and that climate change has the potential to reduce Sierra snowpack (a primary source of drinking water), exacerbate existing air quality problems, adversely impact human health, threaten coastal real estate and habitat by causing sea level rise, and impact crop production. The Executive Order also states that “mitigation efforts will be necessary to reduce greenhouse gas emissions”. To address the issues described above, the Executive Order established emission reduction targets for the State: reduce GHG emissions to 2000 levels by 2010, to 1990 levels by 2020 and to 80% below 1990 levels by 2050. Currently only the 2020 and 2030 targets have been adopted by the State through legislation (see Assembly Bill and Senate Bill 32, below). As a result, all of the impact discussions, mitigation, and strategies are based on meeting the 2030 target, not the longer-term 2050 target.

RENEWABLE PORTFOLIO STANDARD (RPS)

Established in 2002 under SB 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2, California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020. In 2015, SB 350 was signed into law by Governor Jerry Brown. This bill extended the State's RPS program by requiring that publicly owned utilities procure 50 percent of their electricity from renewable energy sources by 2030. This bill was further modified by SB 100 in 2018 to establish a 60 percent RPS target by 2030.

It should be noted that SMUD was the only large California utility to meet the statewide goal of supplying 20 percent of its power from renewables in 2010. In fact, SMUD exceeded the statewide goal and their own goal of 23.8 percent by supplying more than 24 percent of its retail sales with renewable energy in 2010. SMUD has chosen to meet or exceed the State requirements of 33 percent by 2020 and is developing strategies to meet the 2030 goal of 60 percent renewable energy. SMUD has also adopted a Climate Emergency Declaration that establishes a policy goal for SMUD electricity generation to be carbon neutral by 2030. That plan **was**~~is anticipated to be~~ presented to the SMUD Board of Directors in March 2021.

Assembly Bill 32

In September 2006, Assembly Bill (AB) 32 was signed by Governor Schwarzenegger of California. AB 32 requires that California GHG emissions be reduced to 1990 levels by the year 2020, just like Executive Order S-3-05. However, AB 32 is a comprehensive bill that requires ARB to adopt regulations requiring the reporting and verification of statewide greenhouse gas emissions, and it establishes a schedule of action measures. AB 32 also requires that a list of emission reduction strategies be published to achieve emissions reduction goals.

Senate Bill 375

On September 30, 2008, Senate Bill (SB) 375 was signed by Governor Schwarzenegger. SB 375 combines regional transportation planning with sustainability strategies in order to reduce greenhouse gas emissions in California's urbanized areas. Existing law requires each regional transportation planning agency, which in Sacramento County's case is the Sacramento Area Council of Governments (SACOG), to adopt a Metropolitan Transportation Plan. SB 375 required the California Air Resources Board (CARB) to set performance targets for reduction of passenger vehicle emissions per capita in each of 16 Metropolitan Planning Organizations (MPOs) in the state for 2020 and 2035. For the SACOG MPO, these targets were set at 7% below 2005 per capita emissions for 2020 and 16% below 2005 per capita emissions for 2035. MPOs are not required to meet the greenhouse gas emission targets established by ARB, but if they conclude it is not feasible to do so, they must prepare an Alternative Planning Scenario to demonstrate what further land use and/or transportation actions would be required to meet the targets. SB 375 also requires that the Metropolitan Transportation Plan for each MPO include a Sustainable Communities Strategy (SCS) that integrates the land use and transportation components, and amends CEQA to provide incentives for housing and mixed use projects that help to implement an MTP/SCS that meets the CARB targets.

SENATE BILL 32

On September 8, 2016 Senate Bill (SB) 32 was signed by Governor Jerry Brown. SB 32 builds upon previous GHG reduction goals by requiring that the CARB ensures that statewide GHG emissions are reduced by 40 percent below the 1990 level by the year 2030. Additionally, SB 32 emphasized the critical role that reducing GHG emissions would play in protecting disadvantaged communities and the public health from adverse impacts of climate change. Enactment of SB 32 was predicated on the enactment of Assembly Bill 197, which seeks to make the achievement of SB 32's mandated GHG emission reductions more transparent to the public and responsive to the Legislature.

ENDANGERMENT FINDING

On December 7, 2009, the U.S. EPA made an Endangerment Finding and a Cause or Contribute Finding related to greenhouse gases. The U.S. EPA Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases – carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) – in the atmosphere threaten the public health and welfare of current and future generations (endangerment). The Administrator also found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare (Cause or Contribute).

SACRAMENTO COUNTY GENERAL PLAN

The Land Use Element of the Sacramento County General Plan contains the following applicable policy:

LU-115. It is the goal of the County to reduce greenhouse gas emissions to 1990 levels by the year 2020. This shall be achieved through a mix of State and local action.

SACRAMENTO COUNTY CLIMATE ACTION PLANNING

In November of 2011, Sacramento County approved the Phase 1 Climate Action Plan Strategy and Framework document (Phase 1 CAP), which is the first phase of developing a community-level Climate Action Plan. The Phase 1 CAP provides a framework and overall policy strategy for reducing greenhouse gas emissions and managing our resources in order to comply with AB 32. It also highlights actions already taken to become more efficient, and targets future mitigation and adaptation strategies. This document is available at http://www.green.saccounty.net/Documents/sac_030843.pdf. The Phase 1 CAP contains policies/goals related to agriculture, energy, transportation/land use, waste, and water.

Goals in the section on agriculture focus on promoting the consumption of locally-grown produce, protection of local farmlands, educating the community about the intersection of agriculture and climate change, educating the community about the importance of open space, pursuing sequestration opportunities, and promoting water conservation in agriculture. Actions related to these goals cover topics related to urban forest management, water conservation programs, open space planning, and sustainable agriculture programs.

Goals in the section on energy focus on increasing energy efficiency and increasing the usage of renewable sources. Actions include implementing green building ordinances and programs, community outreach, renewable energy policies, and partnerships with local energy producers.

Goals in the section on transportation/land use cover a wide range of topics but are principally related to reductions in vehicle miles traveled, usage of alternative fuel types, and increases in vehicle efficiency. Actions include programs to increase the efficiency of the County vehicle fleet, and an emphasis on mixed use and higher density development, implementation of technologies and planning strategies that improve non-vehicular mobility.

Goals in the section on waste include reductions in waste generation, maximizing waste diversion, and reducing methane emissions at Kiefer Landfill. Actions include solid waste reduction and recycling programs, a regional composting facility, changes in the waste vehicle fleet to use non-petroleum fuels, carbon sequestration at the landfill, and methane capture at the landfill.

Goals in the section on water include reducing water consumption, emphasizing water efficiency, reducing uncertainties in water supply by increasing the flexibility of the water allocation/distribution system, and emphasizing the importance of floodplain and open space protection as a means of providing groundwater recharge. Actions include metering, water recycling programs, water use efficiency policy, water efficiency audits, greywater programs/policies, river-friendly landscape demonstration gardens, participation in the water forum, and many other related measures.

The Phase 1 CAP is a strategy and framework document. The County adopted the Phase 2A CAP (Government Operations) on September 11, 2012. Neither the Phase 1 CAP nor the Phase 2A CAP are “qualified” plans through which subsequent projects may receive CEQA streamlining benefits. ~~The County is currently developing a Communitywide CAP, which will flesh out the strategies involved in the strategy and framework CAP, and will include economic analysis, intensive vetting with all internal departments, community outreach/information sharing, timelines, and detailed performance measures.. The Communitywide CAP is targeted for adoption in summer 2021.~~

Sacramento County began work on an updated communitywide CAP (Phase 2B CAP) in 2016. The County released the draft Phase 2 CAP for public review in March of 2021. Based on the inventory and GHG reductions identified in the Phase 2 CAP, the County has set a goal of achieving a 4.0 metric tons of carbon dioxide equivalent per capita (MTCO$_2$e/capita) for 2030, resulting in an emissions limit of 3,674,904 MTCO$_2$e (Sacramento County 2021). As allowed under CEQA Guidelines

Section 15183(b), lead agencies may choose to analyze and mitigate significant GHG emissions in a plan for the reduction of GHG emissions or similar document. At the time this Final ESIR was prepared, the CAP remains in draft form and has not been formally adopted by the County. As such, the CAP is not yet qualified for use in CEQA review. The Phase 2B CAP is anticipated to be formally adopted in the first half of 2022.

SIGNIFICANCE CRITERIA

CEQA Guidelines section 15064.4 states that an agency should make a "good faith effort . . . to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project". It is left to the lead agency's discretion to use a quantitative or qualitative approach. Factors that should be considered when determining significance are:

1. The extent to which the project may increase or decrease greenhouse gas emissions compared to the baseline;

2. Whether the project exceeds any applicable significance threshold; and

3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.

The guidelines do not include a numeric significance threshold, but instead defer to the lead agency to determine whether there are thresholds which apply to the project. With regard to the third item, statewide plans include AB 32 and SB 375, as described in the Regulatory setting. The underlying strategy and assumptions of the AB 32 Scoping Plan were used to develop County thresholds. AB 32 requires emissions be reduced to 1990 levels by the year 2020, which is estimated in the AB 32 2008 Scoping Plan to be 15% below *existing (2005) emissions*. The text is emphasized to note that the goal is not 15% below what is known as "business-as-usual" conditions or unmitigated project emissions; it is 15% below the emissions which were existing in California in the year 2005. In the AB 32 2017 Scoping Plan, emissions need to be reduced to 40% below 1990 levels by 2030.

In April 2020, SMAQMD adopted an update to their land development project operational GHG threshold, which requires a project to demonstrate consistency with CARB's 2017 Climate Change Scoping Plan. SMAQMD's technical support document, "Greenhouse Gas Thresholds for Sacramento County", identifies operational measures that should be applied to a project to demonstrate consistency.

All projects must implement Tier 1 Best Management Practices (BMP) to demonstrate consistency with the Climate Change Scoping Plan. After implementation of Tier 1 BMPs, project emissions are compared to the operational land use screening levels table (equivalent to 1,100 metric tons of CO_2e per year). If a project's operational emissions are less than or equal to 1,100 metric tons of CO_2e per year after implementation of Tier

1 BMPs, the project will result in a less than cumulatively considerable contribution and has no further action. Tier 1 BMPs include:

- BMP 1 – no natural gas: projects shall be designed and constructed without natural gas infrastructure.
- BMP 2 – electric vehicle (EV) Ready: projects shall meet the current CalGreen Tier 2 standards (Multi-family dwellings = 20% of total parking spaces to be EV Capable), except all EV Capable spaces shall be instead EV Ready.
  - EV Capable requires the installation of "raceway" (the enclosed conduit that forms the physical pathway for electrical wiring to protect it from damage) and adequate panel capacity to accommodate future installation of a dedicated branch circuit and charging station(s).
  - EV Ready requires all EV Capable improvements plus installation of dedicated branch circuit(s) (electrical pre-wiring), circuit breakers, and other electrical components, including a receptacle (240-volt outlet) or blank cover needed to support future installation of one or more charging stations.

For large or inefficient projects (exceed screening levels), additional analysis is required to assess GHG impacts and projects must implement Tier 2 BMP:

BMP 3 – Residential projects shall achieve a 15% reduction in VMT per resident, and office projects should achieve a 15% reduction in VMT per worker compared to existing average VMT per capita for the county, or for the city if a more local SB 743 target has been established. Retail project should achieve no net increase in total VMT, as required to show consistency with SB 743. These reductions can be achieved by many strategies, such as:

Located in an area that already has low VMT due to location, transit service, etc.

Adopt CAPCOA measure

Join a Transportation Management Association

Incorporate traffic calming measures

Incorporate pedestrian facilities and connections to public transportation

Promote electric bicycle or other micro-mobility options

SMAQMD's GHG construction and operational emissions thresholds for Sacramento County are shown in Table CC-2. The County of Sacramento adopted the SMAQMD thresholds on December 16, 2020 by Resolution #2020-0855.

Table CC-2: GHG Thresholds

Land Development and Construction Projects		
	Construction Phase	**Operational Phase**
Greenhouse Gas as CO_2e	1,100 metric tons per year	1,100 metric tons per year
Stationary Source Only		
	Construction Phase	**Operational Phase**
Greenhouse Gas as CO_2e	1,100 metric tons per year	10,000 metric tons per year

METHODOLOGY

SMAQMD has established recommended thresholds that ensure that 90 percent of emissions from projects in the region are reviewed to determine the need for additional mitigation. According to SMAQMD's methodology, a land use development project with operational emissions that are less than 1,100 metric tons (MT) of carbon dioxide equivalent (CO_2e) per year will not result in a significant impact and will not require additional mitigation. SMAQMD assumes that projects with operational emissions below 1,100 MT of CO_2e per year will not exceed their construction GHG threshold of significance as long as the project does not include buildings that are more than four stories tall, significant trenching, demolition activities, a compact construction schedule, significant cut and fill operations, or significant truck activity.

SMAQMD has established an Operational Screening Levels table, which shows the size of development, by land use type, that SMAQMD has determined would not exceed the operational GHG emissions thresholds. Projects that are smaller than those listed in the table and, which meet the construction parameters listed above, and commit to Tier 1 BMPs, are considered to have a less than significant impact related to Climate Change. For large and inefficient projects or cannot meet Tier 1 BMPs, SMAQMD recommends the use of CalEEMod to quantify the GHG emissions that would be generated by the project.

The proposed project is considered a large project under the new guidance. A *Greenhouse Gas Emissions Assessment for the Proposed Cargo Facility and SMF Master Plan Update* was prepared by Kimley-Horn and Associates in January 2021 (reference Appendix CC-1). The assessment studied the significant changes to the Master Plan Update including the proposed cargo facility (PAL 1), new concourse (PAL 2), consolidated rental car facility (PAL 2) and 330 acres of commercial development (PAL 3). Where specific project information is not known, general project size (acres) and building square footage was estimated to make a meaningful analysis. Table CC-3 below illustrates the respective building assumptions.

Table CC-3: Project Assumptions Used in CalEEMod

Land Use Type	Size (Thousand Square Feet)	Lot Acreage	Daily Trip Rate	Total Daily Trips
Cargo Facility (PAL 1)				
Cargo Facility (Unrefrigerated Warehouse)	950	21.81	9.8	9,310
Parking, Ramp, ad Taxi Lane (Parking Lot/Other Non-Asphalt [Concrete] Surface	2,434.57	55.89	0	0
Total	**3,384.57**	**77.70**	**--**	**9,310**
Airport Master Plan				
New Concourse (PAL 2)	267.73	6.15	27.92	7,475
Consolidated Car Rental Facility (PAL 2)	2,252.50	10.30	0	0
Commercial Development (PAL 3)	3,908.23	329.59	1.68	6,566
Total	**6,428.46**	**346.04**	**--**	**14,041**

The assessment used CalEEMod version 2016.3.2 to determine the proposed projects GHG emissions. CalEEMod is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions, including GHG emissions, from land use projects. The model applies inherent default values for various land uses, including electricity and natural gas usage, water supply and distribution, wastewater treatment, and solid waste disposal. However, where project-specific data was available, such data was input into the model (e.g., vehicle trips, applied mitigation). Modifications to the model include adjustments to the CalEEMod energy inputs to be consistent with the most current version of Title 24, Part 6 Building Energy Efficiency Standards and natural gas usage to comply with SMAQMD BMP-1, no natural gas. Emissions associated with the SMF Master Plan Update were determined using the VMT information contained in the VMT Assessment prepared for the project. Values were inserted into EMFAC 2017 to yield an emissions value for mobile sources. Emissions were modeled for operational year 2022.

IMPACTS AND ANALYSIS

IMPACT: GENERATE GREENHOUSE GAS EMISSIONS THAT MAY IMPACT THE ENVIRONMENT

As stated in the introduction, the proposed project is a modification of the SMF Master Plan adopted in 2007. The prior EIR constitutes the CEQA baseline and includes many of the identified airport facilities. The proposed changes that deviate significantly from the prior EIR are the proposed cargo facility, new concourse, consolidated car rental facility and the commercial development north of I-5. The GHG Assessment prepared by Kimley-Horn conducted GHG emissions modeling for the cargo facility, new concourse, consolidated car rental facility and the commercial development, and the Master Plan Update as a whole, using the vehicle miles traveled assessment prepared for the proposed project. The emissions are presented below for construction (short-term) and operational (long-term) emissions.

CONSTRUCTION-RELATED GHG EMISSIONS

CARGO FACILITY

As seen in Table CC-3, construction of the proposed cargo facility would generate a total of approximately 2,212 $MTCO_2e$, (year 1- 755, year 2- 1,457). Emissions would exceed SMAQMD construction phase GHG threshold of 1,100 $MTCO_2e$ per year. The Air Quality Guide allows for construction emissions to be amortized over the expected operational (long-term) life of the project. The amortized project construction emissions would be 74 $MTCO_2e$ per year.

MASTER PLAN UPDATE

The modeling for the Master Plan Update was completed assuming all three Master Plan elements were being constructed at the same time. While this could happen with various Master Plan elements within the same PAL, the specific elements (or projects) modeled here are in separate phases, but this gives a conservative estimate of GHG emissions that may be produced at any given time. As seen in Table CC-4, construction of all three Master Plan Update projects would generate a total of approximately 5,843 $MTCO_2e$, (year 1- 1,020, year 2- 4,823). Emissions would exceed SMAQMD construction phase GHG threshold of 1,100 $MTCO_2e$ per year. The Air Quality Guide allows for construction emissions to be amortized over the expected operational (long-term) life of the project. The amortized project construction emissions would be 195 $MTCO_2e$ per year. For commercial development projects that meet the construction screening criteria, it can be assumed that the project would not exceed GHG thresholds.

Table CC-4: Construction-Related GHG Emissions for the Cargo Facility

	$MTCO_2e$
Cargo Facility	
Construction Year 1	755
Construction Year 2	1,457
Total Construction Emissions	2,212
30-Year Amortized Construction Emissions	74
Master Plan Update	
Construction Year 1	1,020
Construction Year 2	4,823
Total Construction Emissions	5,843
30-Year Amortized Construction Emissions	195

OPERATIONAL GHG EMISSIONS

CARGO FACILITY

The operational GHG emissions associated with the proposed cargo facility would result from direct emissions associated with project-generated vehicular traffic and operation of landscape equipment. Indirect GHG emissions would be produced by off-site generation of electricity, energy to convey water and wastewater, solid waste and fugitive refrigerant from air conditioning or refrigerators. The total unmitigated GHG emission associated with the proposed cargo facility are presented in Table CC-5 below. Since the construction emissions were amortized, they are included in the operational totals.

Consistent with the SMAQMD GHG Guidelines, Tier 1 BMPs 1 and 2 were applied to the project and the model was adjusted accordingly. In addition, mitigation measures consistent with those recommended in the *SMF Cargo Facility Project and Master Plan Update Air Quality Assessment* (Kimley-Horn, January 2021) were incorporated into the model. These measures include: 2010 or newer trucks, hookups and EV charging stations to support future zero-emission heavy-duty vehicles; **and** a Transportation Demand Management (TDM) program **which may include** ~~and~~ establishing a new, or joining and maintaining membership in an existing Transportation Management Association (TMA).

Table CC-5: Operational GHG Emissions for Cargo Facility

Emissions Source	$MTCO_2e$ per Year
Unmitigated	
Area	0.03
Energy	818
Mobile	20,606
Waste	449
Water	306
Amortized Construction Emissions	74
Total Annual GHG Emissions - Unmitigated	**22,253**
Mitigated	
Area	0.03
Energy	807
Mobile	20,392
Waste	225
Water	245
Amortized Construction Emissions	74
Total Annual GHG Emissions - Mitigated	**21,743**

MASTER PLAN UPDATE

The proposed Master Plan Update shifts the timing, configuration and number of previously identified concourses and gates. This is in response to accommodate growth over the next 20 years. In addition to the proposed cargo facility detailed above, significant changes proposed in the Master Plan Update include the new concourse, consolidated car rental facility and 330 acres of commercial development north of I-5. These Master Plan facilities will generate approximately 18,202 $MTCO_2e$ per year (Table CC-6).

Currently, more than 2.1 million domestic passengers and 1.6 million international passengers travel to airports outside the Sacramento region, largely the Bay area. If the expansion at the airport is not completed, this travel is expected to continue as demand for service and population increases over time. Estimates for future air travel prepared for the Master Plan Update anticipate that half of the anticipated growth at SMF will result from recapturing passengers that would have traveled to the Bay Area.

The length of trips for some passengers will shorten (reduction in VMT), thereby directly corresponding in a reduction of mobile source GHG emissions. Using the CARB's

EMFAC2017 model, a VMT reduction of 486,941 vehicle miles per day as calculated in the VMT Assessment prepared for the project, the SMF Master Plan Update would have an emissions reduction of -34,313 $MTCO_2e$ per year.

Table CC-6: Operational GHG Emissions for the Master Plan Update Projects

Emissions Source	$MTCO_2e$ per Year
Unmitigated	
Area	0.17
Energy	4,166
Mobile	11,918
Waste	2,615
Water	1,352
Amortized Construction Emissions	195
Total Annual GHG Emissions - Unmitigated	**20,247**
Mitigated	
Area	0.17
Energy	4,056
Mobile	11,755
Waste	1,307
Water	1,084
Amortized Construction Emissions	195
Total Annual GHG Emissions - Mitigated	**18,397**

Table CC-7: Total GHG Emissions for the Master Plan Update

Emissions Source	$MTCO_2e$ per Year
Total SMF Master Plan Update Emissions (Construction + Operations)	18,397
Total Annual Cargo Facility GHG Emissions	21,743
SMF Master Plan Update VMT Emissions Reduction	-34,313
Total Net Emissions	**5,827**

OPERATIONAL GHG EMISSION CONCLUSIONS

The SMF Master Plan Update will result in an overall increase of GHG emissions. As shown in Table CC-7 above, the total GHG emissions from Master Plan projects will result in an increase of 40,140 $MTCO_2e$ per year. This exceeds the GHG threshold of 1,100 $MTCO_2e$. According to the SMAQMD GHG threshold guidance, projects that exceed GHG thresholds after application of Tier 1 BMPs are considered large or inefficient projects and must implement Tier 2 BMP. Under Tier 2 BMP, the project's VMT is compared to the County's VMT target for the project type (16.4 for industrial uses and no net increase for regional public facilities; Table TC-2). If the project is at, or below, the County's target, then no further mitigation is required. However, if the project exceeds the County's target, then the project should reduce the VMT by 15 percent over the existing County target (16.4). The proposed cargo facility and Master Plan Update would generate average VMTs of 22.59 and 20.52 respectively; which exceeds the County's VMT targets. In order to meet Tier 2 BMP, projects should reduce employee VMT 15 percent below the County's VMT target to 13.9.

Even after applying the Master Plan Update VMT emissions reductions, the total net GHG emissions associated with the SMF Master Plan Update will result in an increase of 5,827 $MTCO_2e$ per year, exceeding thresholds. Therefore, additional mitigation is recommended to develop a TDM program and establish a new or join an existing TMA in compliance with Tier 2 BMP.

Mitigation is recommended to reduce operational GHG emissions to the extent feasible. Measures include the compliance with **BMPs during construction, and operational** Tier 1 and 2 BMPs of SMAQMD GHG Guidelines, and to implement applicable County CAP checklist measures when they become available in the future. Since the County CAP is not yet adopted, the recommended mitigation measure cannot be applied in its entirety until a future date and its effects are not currently quantifiable, GHG emissions impacts from the SMF Master Plan Update are considered ***significant and unavoidable***.

MITIGATION MEASURES

CC-1 All future development projects under the SMF Master Plan Update shall demonstrate compliance with SMAQMD Tier 1 BMPs (required for all projects) and Tier 2 BMPs (Mitigation Measures AQ-6 through AQ-7). Upon adoption of the Sacramento County Communitywide Climate Action Plan (CAP) and CAP Checklist, future SMF Master Plan Development projects shall demonstrate consistency with and adopt applicable CAP Checklist measures.

CC-2 **All future development projects under the SMF Master Plan Update should incorporate, to the extent feasible, the following SMAQMD Guidance for Construction GHG Emissions Reductions (Best Management Practices):**

- **a. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3 minutes (5 minute limit is required by the State airborne toxics control measure).**
- **b. Maintain construction equipment in proper working condition according to the manufacturer's specifications.**
- **c. Use the proper size of equipment for the job.**

d. **Use equipment with new technologies (repowered engines, electric drive trains).**
e. **Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).**
f. **Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power.**
g. **Use ARB approved low carbon fuel for construction equipment. (*NOx emissions from the use of low carbon fuels must be determined and any increase mitigated*)**

Impact: Conflict With Plans, Policies, Or Regulations Adopted To Reduce Greenhouse Gas Emissions

The proposed Master Plan Update is estimated to result in a net increase of approximately 5,827 $MTCO_2e$ per year. This exceeds established thresholds and could impede the ability of SMAQMD to meet the goals and policies of the State to meet 2030 emission reductions. Mitigation is recommended to reduce GHG emissions to the extent feasible consistent with existing Best Management Practices and future County CAP measures.

With respect to State goals and policies, a complete table of consistency with the CARB 2017 Scoping Plan is provided in Table 7 of Appendix GHG-1. The project is consistent with strategies that are applicable to the proposed project.

Executive Order S-3-05 requires the State to reach 80% below 1990 levels by the year 2050. At this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not been developed. Nevertheless, it can be anticipated that operation of the proposed project would benefit from the implementation of current and potential future regulations (e.g., improvements in vehicle/engine emissions renewable electricity portfolios, etc.) that are enacted to meet this goal.

The proposed Master Plan Update demonstrates consistency with State goals and would not conflict with any applicable plan, policy, or regulation adopted to reduce GHG emissions, including Title 24, AB 32, and SB32. However, the project does exceed local plans adopted to reduce GHG and despite implementation of recommended mitigation measures, GHG emission impacts remain ***significant and unavoidable***.

Mitigation Measures

Implement Mitigation Measure CC-1 **and CC-2**.

6 CULTURAL RESOURCES

INTRODUCTION

A cultural resources report was completed initially for the Airport in 2006 during the preparation of the EIR for the Master Plan. The FEIR identified potentially significant impacts associated with buried archeological and historical resources. Mitigation measures were adopted to reduce these impacts to less than significant. This document will assess potential impacts associated with the proposed airport facilities paying particular attention to areas not previously surveyed.

ENVIRONMENTAL SETTING

The Sacramento International Airport (SMF) is located in the Natomas Basin of the Sacramento Valley. The airport is located just east of the Sacramento River, which bends south of SMF. This region is rich in agricultural history and Native American history. The contextual environmental setting presented in the FEIR remains applicable to this analysis.

REGULATORY SETTING

FEDERAL

Cultural resources are considered during federal undertakings chiefly under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), as well as the National Environmental Policy Act (NEPA). Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of NHPA. Other federal laws pertinent to cultural resources include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resources Protection Act (ARPA) of 1979, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1989, among others. Below is a more detailed description of applicable federal regulations.

ANTIQUITIES ACT

The Federal Antiquities Act of 1906 was created with the intent to protect cultural resources in the United States. The Antiquities Act prohibits appropriation, excavation, injury, and destruction of “any historic or prehistoric ruin or monument, or any object of antiquity” located on lands owned or controlled by the federal government, without permission of the secretary of the Federal department with jurisdiction. Accordingly, the Antiquities Act provided early framework to protect cultural resources within the United States.

NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) requires that federal agencies assess whether federal actions would result in significant effects on the human environment. The Council on Environmental Quality's (CEQ's) NEPA regulations further stipulate that identification of significant effects should incorporate "the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register for Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources" (40 CFR 1508.27[b][8]).

NATIONAL HISTORIC PRESERVATION ACT

Archaeological and built environment resources (buildings and structures) are protected through the National Historic Preservation Act (NHPA of 1966, as amended (16 United States Code [USC] 470f) and its implementing regulations: Protection of Historic Properties (36 Code of Federal Regulations [CFR] Part 800), the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979.

Prior to implementing an undertaking (e.g., issuing a federal permit), federal agencies (e.g., U.S. Army Corps of Engineers [USACE]) are required under Section 106 of NHPA to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places (NRHP). NHPA Section 101(d)(6)(A) allows properties of traditional religious and cultural importance to a tribe to be determined eligible for inclusion in the NRHP. Under the NHPA, a find is significant if it meets the NRHP listing criteria under 36 CFR 60.4, as stated below.

The quality of *significance* in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and that:

a. Are associated with events that have made a significant contribution to the broad patterns of our history; or

b. Are associated with the lives of persons significant in our past; or

c. Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d. Have yielded, or may be likely to yield, information important in prehistory or history.

STATE

The State of California implements NHPA through its statewide comprehensive cultural resource preservation programs. The California Office of Historic Preservation (OHP), an office of the California Department of Parks and Recreation (DPR), implements the policies of NHPA on a statewide level. OHP also maintains the California Historical Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the State's jurisdiction.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA), as codified in Public Resource Code (PRC) Sections 21000 et seq. and implemented via the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15000 et seq.), is the principal statute governing the environmental review of projects in the State. CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources. If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2 (a), (b), and (c)). Section 21083.2(g) describes a *unique archaeological resource* as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

A *historical resource* is a resource listed, or determined to be eligible for listing, in the California Register of Historical Resources (CRHR) (Section 21084.1); a resource included in a local register of historical resources (Section 15064.5(a)(2)); or any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (Section 15064.5 (a)(3)). Sacramento County does not currently have a local register.

Public Resources Code (PRC) Section 5024.1, Section 15064.5 of the Guidelines, and Sections 21083.2 and 21084.1 of the Statutes of CEQA were used as the basic guidelines for the cultural resources study. PRC Section 5024.1 requires evaluation of historical resources to determine their eligibility for listing on the CRHR. The purpose of the register is to maintain listings of the State's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources on the California Register were expressly developed to be in accordance with previously established criteria developed for listing on the NRHP.

In order to be considered a historical resource, a resource must be at least 50 years old. In addition, the State CEQA Guidelines define a historical resource as follows:

a. A resource listed in the California Register of Historical Resources (CRHR).

b. A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g).

c. Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The CRHR is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The CRHR criteria are based on National Register of Historic Places (NRHP) criteria (PRC Section 5024.1[b]). Certain resources are determined by CEQA to be automatically included in the CRHR, including California properties formally eligible for or listed in the NRHP. To be eligible for listing in the CRHR as a historical resource, a prehistoric or historic-period resource must be significant at the local, state, and/or federal level under one or more of the following criteria:

   1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

   2. Is associated with the lives of persons important in our past.

   3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

   4. Has yielded, or may be likely to yield, information important in prehistory or history (14 CCR Section 4852[b]).

For a resource to be eligible for the CRHR, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. A resource that does not retain sufficient integrity to meet NRHP criteria may still be eligible for listing in the CRHR.

CEQA requires lead agencies to determine if a proposed project would have a significant effect on important historical resources or unique archaeological resources. If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and State CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the State CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083.2 regarding unique archaeological resources. A *unique archaeological resource* is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC Section 21083.2 [g]).

The State CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (14 CCR Section 15064[c][4]).

Madera Oversight Coalition, Inc. v. County of Madera (2011)

In the past, it was common practice for many CEQA practitioners to provide performance-based mitigation for cultural resources, stipulating that further evaluation and treatment of resources would be performed in the future. The 2011 decision from the *Madera Oversight Coalition, Inc. v. County of Madera* (2011 [199 Cal. App.4th 48, 81]) case determined this practice to be unacceptable under CEQA and required evaluation of cultural resources subject to CEQA to be performed at a level sufficient to characterize the resources prior to environmental impact report (EIR) certification (instead of waiting until preconstruction or construction stages of a project). Cultural resources evaluations in this EIR have been completed consistent with the *Madera Oversight* decision.

Sacramento County General Plan

The Sacramento County General Plan Conservation Element, states under Section VIII, Cultural Resources, the following goal and six objectives:

> Promote the inventory, protection and interpretation of the cultural heritage of Sacramento County, including historical and archaeological settings, sites, buildings, features, artifacts and/or areas of ethnic historical, religious or socio-economic importance.

1. Comprehensive knowledge of archeological and historic site locations.

2. Attention and care during project review and construction to ensure that cultural resource sites, either previously known or discovered on the project site, are properly protected with sensitivity to Native American values.

3. Structures with architectural or historical importance preserved to maintain contributing design elements.

4. Known cultural resources protected from vandalism unauthorized excavation, or accidental destruction.

5. Properly stored and classified artifacts for ongoing study.

6. Public awareness and appreciation of both visible and intangible historic and cultural resources.

To implement the primary goal and the objectives, the Conservation Element contains the following policies:

CO-150. Utilize local, state and national resources, such as the NCIC, to assist in determining the need for a cultural resources survey during project review.

CO-155. Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archeological significance of the site merits excavation and recording procedure. On-site reinternment shall have priority. The project developer shall provide the burden of proof that offsite reinternment is the only feasible alternative. Reinternment shall be the responsibility of local tribal representatives.

CO-157. Monitor projects during construction to ensure crews follow proper reporting, safeguards, and procedures.

CO-158. As a condition of approval of discretionary permits, a procedure shall be included to cover the potential discovery of archaeological resources during development or construction.

CO-169. Restrict the circulation of cultural resource location information to prevent potential site vandalism. This information is exempt from the "Freedom of Information Act".

Disclosure of Cultural Resources Information

Public disclosure of site-specific cultural resources information is expressly exempt from the California Public Records Act, Government Code Sections 6250-6270. Furthermore, information obtained during Native American consultation or through consultation with the local and state agencies, including the North Central Information Center (NCIC), should remain confidential and is exempt from public disclosure under Senate Bill 922. Pursuant to General Plan Policy CO-169, Sacramento County staff has signed an “Agreement to Confidentiality” with the NCIC that states that site-specific information will not be distributed or released to the public or unauthorized individuals. An authorized individual is a professional archaeologist or historian that qualifies under the Secretary of Interior’s standards to view confidential cultural resources materials.

SIGNIFICANCE CRITERIA

In order for a cultural resource to be considered a “historic property” under NRHP criteria (i.e., eligible for inclusion on the NRHP), it must be demonstrated that the resource possesses *integrity* of location, design, setting, materials, workmanship, feeling and association, and must meet at least one of the following four criteria delineated by Section 106 (Advisory Council on Historic Preservation 2000), as listed in 36 CFR 60.4:

> (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) That are associated with the lives of persons significant in our past; or
>
> (c) That embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) That have yielded, or may be likely to yield, information important in prehistory or history.

The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing on the NRHP, enumerated above, and require similar protection to what NHPA Section 106 mandates for historic properties. According to PRC Section 5024.1(c)(1-4), a resource is considered *historically significant* if it meets at least one of the following criteria:

> (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
>
> (2) Is associated with the lives of persons important in our past;
>
> (3) Embodies the distinctive characteristics of a type, period, region or method of installation, or represents the work of an important creative individual, or possesses high artistic values; or
>
> (4) Has yielded, or may be likely to yield, information important in prehistory or history.

Under CEQA, if an archeological site is not a significant “historical resource” but meets the definition of a “unique archeological resource” as defined in PRC Section 21083.2, then it should be treated in accordance with the provisions of that section. A unique archaeological resource is defined as follows:

> An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> > (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
> >
> > (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
> >
> > (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Resources that neither meet any of these criteria for listing on the NRHP or CRHR nor qualify as a "unique archaeological resource" under CEQA PRC Section 21083.2 are viewed as not significant. Under CEQA, "A non-unique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" (PRC Section 21083.2(h)).

Impacts to *significant* cultural resources ("historic properties" under NHPA and "historical resources" under CEQA) that affect the characteristics of any resource that qualify it for the NRHP or adversely alter the significance of a resource listed on or eligible for listing on the CRHR are considered a significant effect on the environment (CEQA guidelines 15065(a)(1)). Impacts to *significant* cultural resources from a proposed Project are thus considered significant if a project physically destroys or damages all or part of a resource, changes the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance or introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

In accordance with Appendix G of the State CEQA Guidelines, a project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Cause a substantial adverse change in the significance of an archaeological resource that is a historical resource as defined in Section 15064.5.
- Cause a substantial adverse change in the significance of a built environment resource that is a historical resource pursuant to Section 15064.5.
- Disturb any human remains, including those interred outside of formal cemeteries.

METHODOLOGY

Dudek Consultants have prepared a cultural resources report, *Draft Cultural Resources Inventory Report for the Sacramento International Airport Cargo Facility Project,* *Sacramento County, October 2020,* focusing on the area north of the terminals to be developed with commercial and industrial uses. The report analyzes the historical and archeological context of the project area. This report along with the prior report prepared for the 2007 Master Plan EIR are used to assess project impacts.

Information Center Record Search

In 2020, the North Central Information Center (NCIC), California Historical Resources Information System conducted a records search for the project site. NCIC staff identified 44 previous cultural resource surveys within a half-mile of the project site and 24 that cover at least a portion of the area of potential effect. The records search identified two cultural resources (districts) intersecting the APE, and an additional 21 cultural resources were identified with a half-mile of the APE.

Field Assessment

Dudek staff archaeologists conducted archeological field surveys of the project. A reconnaissance-level survey was conducted for all areas that were not restricted. Pedestrian transects every 15 meters were completed. The ground surface visibility was overall low due to vegetation and paved surfaces at the time of survey. Special attention was paid to areas of erosion, mechanical cuts, drainage ditches or animal burrows; however, no cultural materials were observed on the ground surface for the areas surveyed.

A pedestrian survey of the built environment was completed by walking and/or driving accessible portions of the APE. Character-defining features, spatial relationships were observed and noted.

Impacts And Analysis

Impact: Historical Resources

No new historical resources were identified in the Dudek report. During the cultural resources inventory and evaluation for the 2007 Master Plan EIR, the airport buildings and facilities built in 1966 were reviewed to determine if any would meet the criteria under the CRHR or NRHP even though the structures were not yet 50 years old. The report findings determined that the buildings did not meet the qualifications to be considered a historical resource. As of 2016, when many of the buildings would become eligible, most, if not all, have been demolished and replaced. The only identified historical resources within or near the project site is the Reclamation District 1000 complex of canals and drainages.

RD 1000 (P-34-005251)

The Historic American Engineering Record (HAER) identifies RD 1000 for its importance as a part of a regional reclamation plan that transformed the region from its original floodplain to a distinct open rural landscape consisting of large blocks of fields intersected by levees, canals, and roads that characterize the landscape today. Along with the physical transformation of the landscape came significant changes to the social and economic character of the region. This district, identified as significant at the State level for the period from 1911 to 1939, was among the first and largest reclamation districts in the State and was determined eligible for the National Register of Historic Places in 1994. Several of the resources recorded within the half-mile buffer of the project area are components of RD 1000 including the East Drainage Canal (P-34-002101), and structures and features associated with the Prichard Lake Pumping Plant (P-34-001558, -1559, -4511, -5162).

In 1994, the California Office of Historic Preservation (OHP) in consultation with the United State Army Corps of Engineers (USACE) concurred with the finding that the RD 1000 rural historic landscape district is eligible for inclusion in the NRHP at the State level of significance under NRHP Criterion A for importance within the historic context of reclamation within the period of significance of 1911 to 1939 (JRP 2007: 20, 21).

Types of actions which constitute a substantial adverse change in the significance of a historical resource include physical demolition, destruction, relocation, renovation or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (State CEQA Guidelines Section 15064.5).

The proposed project may alter some of the contributing factors that make up the historic district. Primarily, a portion of the P-4 drain (Lambert Ditch) may be culverted as it is within the proposed commercial development area north of Elverta Road identified in PAL 3. Development of this area is unknown at this time and while it is unlikely that the entire drainage ditch would be culverted, as a conservative approach it is assumed. Water conveyance would continue and would not significantly impact the function of the District. Shoulder improvements to Elverta Road identified in PAL 1 would not compromise the alignment, function or integrity of the roadway; however, the eventual relocation of Elverta Road identified in PAL 4 will change the alignment, but the road would maintain function to support the District needs.

Since the RD 1000 historic district was initially documented in the mid-1990s many of its contributing roads, canals, and drainages have been modified and maintained to support its continued use. Changes proposed as part of this project help support continued use of RD 1000 contributing resources. The overall historic district will still be able to convey its significance as a large rural historic landscape featuring, agricultural fields set within a vast network of canals, drainage ditches, roads, trees, and sparse farmsteads. Therefore, the overall finding for the project in consideration of impacts to historical built environment resources is ***less than significant***.

Mitigation Measures:

None recommended.

IMPACT: ARCHEOLOGICAL OR PREHISTORIC RESOURCES

SMF is located within an area of the County that has been subjected to frequent flooding events, which deposit alluvial sands and silts potentially burying prehistoric artifacts. Additionally, the Sacramento River was an attractive resource for prehistoric peoples and areas along the riverbank have a higher potential for buried deposits. Prior cultural resource surveys have documented Native American resources along the banks of the Sacramento River (P34-002226, P-34-003712).

Subsurface impacts associated with project construction are at least a half-mile from the banks of the Sacramento River. The nearest ground disturbance to known resources is associated with the proposed cargo facility in PAL 1. Given the relatively high number of known cultural resources within a surrounding area, the low visibility of the ground surface during pedestrian survey, and geomorphic setting, the project does have a moderate potential of encountering unanticipated cultural resources within undeveloped areas of the Master Plan area. Mitigation is recommended to reduce this potentially significant impact to ***less than significant***.

MITIGATION MEASURES:

CR-1 Cultural Resources Unanticipated Discoveries

In the event that human remains are discovered in any location other than a dedicated cemetery, work shall be halted and the County Coroner contacted. For all other unexpected cultural resources discovered during project construction, work shall be halted until a qualified archaeologist may evaluate the resource encountered.

1. **Unanticipated human remains**. Pursuant to Sections 5097.97 and 5097.98 of the State Public Resources Code, and Section 7050.5 of the State Health and Safety Code, if a human bone or bone of unknown origin is found during construction, all work is to stop and the County Coroner and the Office of Planning and Environmental Review shall be immediately notified. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission within 24 hours, and the Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent from the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposition of, with appropriate dignity, the human remains and any associated grave goods.

2. **Unanticipated cultural resources**. In the event of an inadvertent discovery of cultural resources (excluding human remains) during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained at the Applicant's expense to evaluate the significance of the find. If

it is determined due to the types of deposits discovered that a Native American monitor is required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites as established by the Native American Heritage Commission shall be followed, and the monitor shall be retained at the Applicant's expense.

a. Work cannot continue within the 100-foot radius of the discovery site until the archaeologist and/or tribal monitor conducts sufficient research and data collection to make a determination that the resource is either 1) not cultural in origin; or 2) not potentially eligible for listing on the National Register of Historic Places or California Register of Historical Resources.

b. If a potentially-eligible resource is encountered, then the archaeologist and/or tribal monitor, Planning and Environmental Review staff, and project proponent shall arrange for either 1) total avoidance of the resource, if possible; or 2) test excavations or total data recovery as mitigation. The determination shall be formally documented in writing and submitted to the County Environmental Coordinator as verification that the provisions of CEQA for managing unanticipated discoveries have been met.

3. **Tribal cultural resources worker awareness.** The appended Tribal Cultural Resources (TCRs) Awareness Brochure, provides a definition and examples of TCRs that may be encountered during construction. The brochure was developed to assist construction teams with the identification and protection of TCRs. The brochure shall be shared with construction teams prior to ground disturbance.

CR-2 Tribal Monitoring

Prior to initiation of ground disturbance, the Sacramento County Department of Airports, or contractor, shall contact the United Auburn Indian Community and the Wilton Rancheria to determine if a Tribal Monitor is required at least two weeks prior to ground disturbance. Provide a copy of Tribal correspondence to the Environmental Coordinator. If a Tribal Monitor is required the following measures are necessary:

a. A compensated (paid) Tribal Monitor from a traditionally and culturally affiliated Native American Tribe shall be retained to monitor specified ground disturbing project related activities.

b. The duration of the monitoring and construction schedule shall be determined at this time.

c. The Tribal Monitor will identify areas requiring monitoring in the project area during vegetation grubbing, stripping, grading or other ground-disturbing activities. All field monitoring activities will be logged by the Tribal Monitor.

d. The Tribal Monitor shall wear the appropriate safety equipment and shall have the necessary background training in construction safety protocols.

e. Tribal Monitors or Tribal Representatives have the authority to request that work be temporarily stopped, diverted, or slowed within 100 feet of the direct impact area if sites or objects of significance are identified. Only a Tribal Monitor or Representative from a culturally affiliated tribe can recommend appropriate treatment and final disposition of Tribal Cultural Resources.

IMPACT: DISTURB HUMAN REMAINS

Section 5097.94 of the Public Resources Code and Section 7050 of the California Health and Safety Code protect Native American burials, skeletal remains and grave goods, regardless of age and provide methods and means for the appropriate handling of such remains. This is supported by County General Plan Policies CO-155. If human remains are encountered, work should halt in that vicinity and the County coroner should be notified immediately. At the same time, an archaeologist should be contacted to evaluate the situation. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of such identification. In the event that a burial is discovered during implementation of the Project, strict adherence to mitigation as outlined in Mitigation Measure CR-1 ensures impact is ***less than significant***.

MITIGATION MEASURES:

Implement Mitigation Measure CR-1, CR-2.

7 HYDROLOGY

INTRODUCTION

The prior SMF Master Plan EIR (2004-0018) Water Quality and Hydrology chapter evaluated potential water quality and hydrology impacts associated with the Master Plan. The analyses evaluated existing aquatic features, groundwater, drainage facilities, runoff volumes and trajectories, and flood protection for planning years 2013 and 2020.

The prior analyses of the 2007 EIR remain appropriate to the current project. This chapter will focus primarily on increases in impervious surfaces, new drainage facilities, and regulatory updates to increase the urban level of protection (ULOP) to a 200-year flood protection standard. This chapter will describe potential impacts associated with an increase in impervious surfaces and the recent construction to meet the ULOP standard and potential impacts of developing within the Natomas Basin. Discussions concerning groundwater use included in the prior EIR will not be revisited.

ENVIRONMENTAL SETTING

SMF is located east and north of the Sacramento River in the Natomas Basin. The Natomas Basin covers approximately 55,000 acres and is bounded by the Natomas Cross Canal on the north, the Sacramento River on the west and south, the American River on the southeast, and the Natomas East Main Drainage Canal on the east.

The Natomas Basin is relatively flat and was historically part of the Sacramento/American River floodplain. Currently, the area is enclosed by levees that separate it from the Sacramento and American rivers. Most of the primary levee system was constructed in the 1910s as part of the Sacramento River Flood Control Project (USFWS et al. 2003 as cited in EDAW 2005). Because of the levees, all stormwater runoff from the basin must be collected and pumped to the Sacramento River. Reclamation District (RD) 1000 operates a system of canals, ditches, and pump stations to convey and pump stormwater runoff from the area to the Sacramento River. Most of these drainage and flood control facilities were developed by RD 1000 between 1905 and 1915 (EDAW 2005) and have been upgraded over the years.

The airport and surrounding County property are crossed by an extensive system of interconnected canals and ditches. Irrigation ditches and drainage canals serve to convey the stormwater runoff within the airport to RD 1000’s main canals, which eventually discharge into the Sacramento River. The airport’s stormdrain system, consisting of an underground pipe collection system and ditches, is maintained by SCDA.

During large storm events, runoff can exceed the capacity of RD 1000’s canal and pump system. Under these conditions, stormwater runoff from the airport will temporarily pond within detention basins, infield areas, and canals/ditches within the airport property. For example, a 100-year, 24-hour storm event, may result in rainfall on the order of 1.5 inches over the entire Natomas Basin area of 55,000 acres, or 6,875 acre-feet[1]. The total volume of water that can be removed from the basin by pumping all eight RD 1000 pumps continuously for 24 hours is approximately 2,750 acre-feet. Therefore, water could pond locally (e.g., within the ditch system) within the Natomas Basin for a day or more.

REGULATORY SETTING

WATER QUALITY

STATE OF CALIFORNIA

The Porter-Cologne Water Quality Control Act is the principal law governing water quality regulation in California. This statute established the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards, which are charged with implementing its provisions. This act establishes a comprehensive program for the protection of water quality and the beneficial uses of waters in the State of California.

SMF is located within Region 5 administered by the Regional Water Quality Control Board. The applicable Basin Plan for the project area is the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins* (CVRWQCB 2004a). The Basin Plan establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the basin, in compliance with the federal Clean Water Act and the Porter-Cologne Water Quality Control Act.

The Porter-Cologne Act also incorporates many provisions of the federal Clean Water Act such as delegation of the National Pollutant Discharge Elimination System (NPDES) program to the SWRCB and Regional Water Quality Control Boards. The SWRCB provides program guidance and oversight, allocates funds, and reviews Regional Water Quality Control Boards decisions. The Regional Water Quality Control Boards have responsibility for individual permitting, inspection, and enforcement actions within each of the nine hydrologic regions of California. SWRCB Order 99-08-DWQ, *NPDES General Permit for Stormwater Discharges Associated with Construction Activity* (General Permit), authorizes a general permit for stormwater discharges associated with construction activities that disturb one or more acre of land. SWRCB Order 97-03-DWQ, *NPDES General Permit to Discharge Stormwater Associated with Industrial Activity* (General Industrial Permit) authorizes a general permit to regulate industrial stormwater discharges.

[1] An acre-foot is the amount of water required to cover 1 acre to the depth of 1 foot. It is equal to approximately 325,851 gallons.

LOCAL

Sacramento County has a National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit issued by Regional Water Quality Control Board. The Municipal Stormwater Permit requires the County to reduce pollutants in stormwater discharges to the maximum extent practicable and to effectively prohibit non-stormwater discharges. The County complies with this permit in part by developing and enforcing ordinances and requirements to reduce the discharge of sediments and other pollutants in runoff from newly developing and redeveloping areas of the County.

The Sacramento area-wide NPDES Municipal Stormwater Permit is a Phase I permit and applies to the County of Sacramento along with the Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova and Sacramento. Originally issued in 1990, the Sacramento stormwater permit has been reissued several times. The most recent permit (NPDES Permit No. CAS082597) was adopted in December 2002, reissued in September 2008, and reissued again in April 2015. The Regional Water Quality Control Board replaced it with a region-wide MS4 permit in June 2016. The Permittees function independently on many tasks, including reviewing, processing and permitting plans for new development and redevelopment in their respective jurisdictions. New construction is required to comply with the Sacramento Region Stormwater Quality Design Manual (SQDM; 2018).

The County has established a Stormwater Ordinance (Sacramento County Code 15.12). The Stormwater Ordinance prohibits the discharge of unauthorized non-stormwater to the County's stormwater conveyance system and local creeks. It applies to all private and public projects in the County, regardless of size or land use type. In addition, Sacramento County Code 16.44 (Land Grading and Erosion Control) requires private construction sites disturbing one or more acres or moving 350 cubic yards or more of earthen material to obtain a grading permit. To obtain a grading permit, project proponents must prepare and submit for approval an Erosion and Sediment Control Plan describing erosion and sediment control best management practices (BMPs) that will be implemented during construction to prevent sediment from leaving the site and entering the County's storm drain system or local receiving waters. Construction projects not subject to SCC 16.44 are subject to the Stormwater Ordinance (SCC 15.12) described above.

In addition to complying with the County's ordinances and requirements, construction sites disturbing one or more acres are required to comply with the State's General Stormwater Permit for Construction Activities (CGP). CGP coverage is issued by the State Water Resources Control Board http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml and enforced by the Regional Water Board. Coverage is obtained by submitting a Notice of Intent (NOI) to the State Board prior to construction and verified by receiving a WDID#. The CGP requires preparation and implementation of a site-specific Stormwater Pollution Prevention Plan (SWPPP) that must be kept on site at all times for review by the State inspector.

Applicable projects applying for a County grading permit must show proof that a WDID # has been obtained and must submit a copy of the SWPPP. Although the County has no enforcement authority related to the CGP, the County does have the authority to ensure sediment/pollutants are not discharged and is required by its Municipal Stormwater Permit to verify that SWPPPs include the minimum components.

The project must include an effective combination of erosion, sediment and other pollution control BMPs in compliance with the County ordinances and the State's CGP.

Urban Level Of Protection (ULOP)

State Of California

In 2007, several bills were passed that amended the California Water Code and Government Code to strengthen flood protection and link land use planning to flood planning, including SB 5 (2007), as amended by SB 1278 (2012) and AB 1259 (2013). One of the primary purposes of SB-5 and related legislation is to better tie local land use decisions that allow development in floodplains to the potential consequences in the event of a levee break.

A key requirement of SB-5 is that local jurisdictions amend their General Plans and Zoning Code to require 200-year flood protection standard in urban or urbanizing areas, and establish the requirement that when land uses are approved in Flood Hazard Zones, the county must make one of the following findings:

1. The facilities of the State Plan of Flood Control or other flood management facilities protect the property to the Urban Level of Flood Protection (ULOP) in urban and urbanizing areas or the Federal Emergency Management Agency (FEMA) standard of flood protection in non-urbanized areas.

2. The county has imposed conditions on the entitlement or permit that will protect the property to the ULOP in urban and urbanizing areas or the FEMA standard of flood protection in non-urbanized areas.

3. The local flood management agency has made adequate progress on the construction of a flood protection system that will result in flood protection equal to or greater than the ULOP in urban or urbanizing areas by 2025.

4. The property is in an undetermined risk area and has met the ULOP.

In most cases, the ULOP is defined as protection against a 200-year flood, although there are exceptions for shallow flooding or flooding from small watersheds. Levee systems in the Sacramento region require major improvements to provide 200-year flood protection.

Local

The County and other land use authorities must make a finding of adequate progress in order to approve new development in the areas being protected. When considering development applications within flood hazard areas within an ULOP area, the County relies upon the 2016 Sacramento Area Flood Control Agency's (SAFCA) ULOP Plan and its subsequent annual reports to provide evidence necessary to make an "adequate progress finding".

California Government Code Section 65007(a)(5) requires local agencies to "annually report to the Central Valley Flood Protection Board (CVFPB) on the efforts in working toward completion of the flood protection system." State requirements are further described in the Urban Level of Flood Protection Criteria (ULOP Criteria; DWR, 2013). The most recent annual report for the region was submitted on August 12, 2020 to the CVFPB. The SAFCA prepares the annual report to the CVFPB.

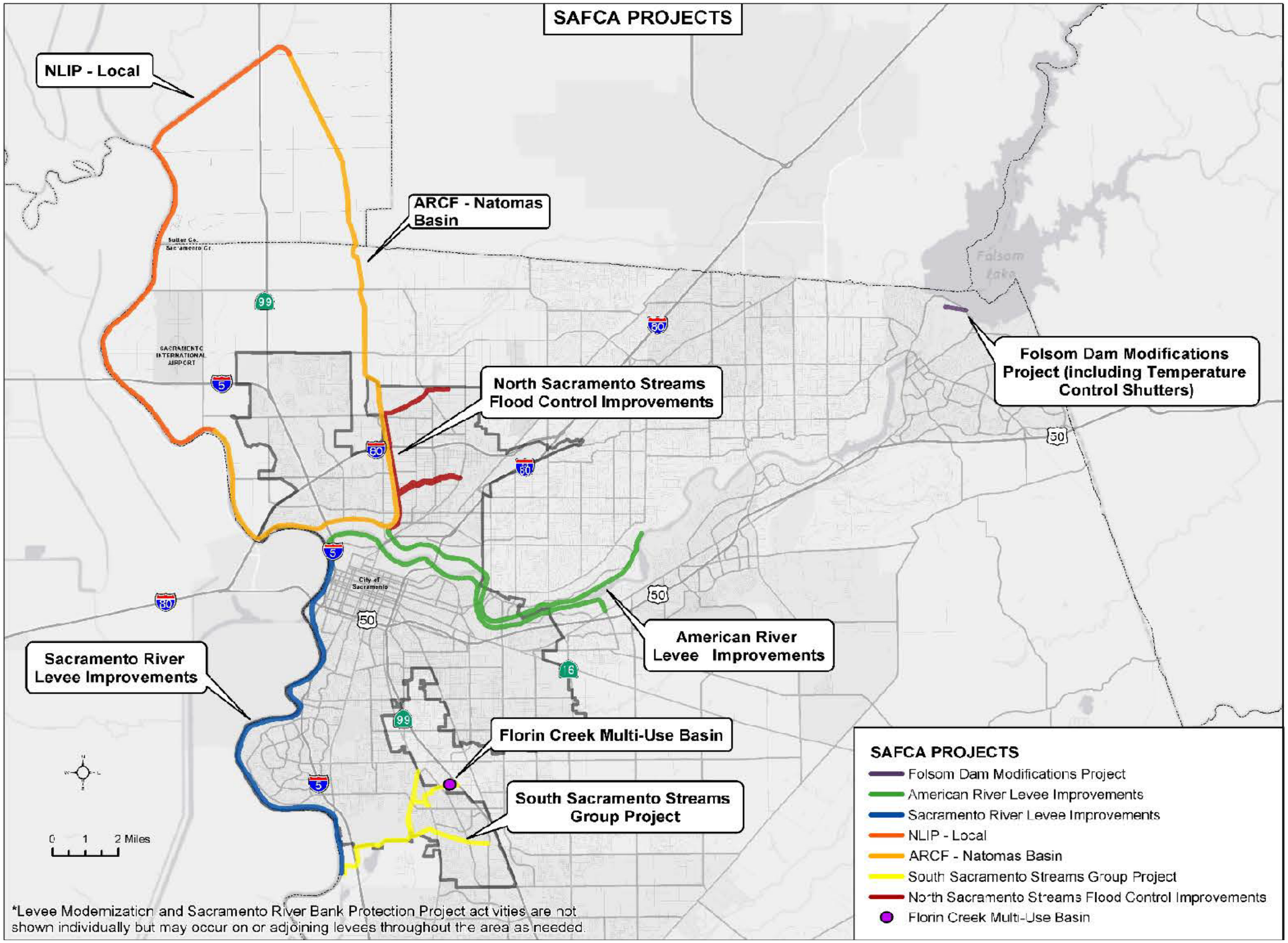
SAFCA was formed in 1989 by local agencies to address the deficiencies in Sacramento's flood control system identified by the USACE following the flood of 1986. Through a joint exercise of powers agreement, the City of Sacramento (City), County of Sacramento, the Sacramento County Water Agency (SCWA), Sutter County, the Sutter County Water Agency, the American River Flood Control District, and Reclamation District 1000 (RD 1000) pooled their common flood control authorities, established a management structure, and identified a program for improving Sacramento's flood control system. This program has three elements:

- Ensure the structural integrity of the existing levee system;
- Provide at least a 100-year level of flood protection as quickly as possible to the areas within the FEMA 100-year floodplain by, among other actions, increasing the space available for flood control at Folsom Dam and Reservoir (Folsom); and
- Work toward achieving at least a 200-year level of flood protection for the Sacramento area.

SAFCA finances the local share of the cost to improve Sacramento's flood control system, by creating assessment districts and levying annual assessments on properties that benefit from the improvements. These assessments are billed on Sacramento County's and Sutter County's annual real property tax bills.

Completed and on-going projects to meet the 200-year ULOP standard are shown in Plate HY-1.

Plate HY-1: SAFCA ULOP Plan Projects



Significance Criteria

In accordance with Appendix G of the State CEQA Guidelines, a project would be considered to have a significant effect if it would:

- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantially additional sources of polluted runoff.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site.
- Violate any water quality standards or waste discharge requirements.
- Develop in an area that is subject to 200-year urban levels of flood protection (ULOP) area that could not make one of the four required findings.

Impacts And Analysis

Impact: Create Or Contribute Runoff Water That Would Exceed The Capacity Of Existing Or Planned Stormwater Drainage Systems Or Provide Substantially Additional Sources Of Polluted Runoff;

And/Or,

Substantially Alter The Existing Drainage Pattern Of The Site Or Area, Including Through The Alteration Of The Course Of A Stream Or River, In A Manner That Would Result In Substantial Erosion Or Siltation On Or Off Site

The northern most portions PAL 1, PAL 3, & PAL 4 will result in approximately 200 of acres of new development not previously analyzed in the prior FEIR. Planned developments include the construction of a new aircraft apron and connecting taxilane, several commercial buildings, landside parking lots, and associated roadway improvements. Approximately 150 acres of pervious area will be compacted and converted to impervious surfaces. Additional impervious surfaces would result in an increase in stormwater peak runoff rates and volumes, which without appropriate stormwater quality controls could result in downstream flooding, erosion and siltation, and other issues affecting water quality.

Stormwater runoff at the existing site drains overland to an existing network of drainage channels that were formerly used for agricultural purposes. The channel network drains north toward a culvert under W. Elverta Road, before entering a channel system north of W. Elverta Road that is managed by Reclamation District 1000 (RD 1000). That channel system drains north to the North Drainage Canal and then west to RD 1000 Pumping Plant 2, where flows are then pumped west across the levee into the Sacramento River.

On-site channels within the development footprint will be filled and replaced by a new subsurface / closed stormwater conveyance system, including inlets, trench drains, storm sewers, culverts, and manholes. The proposed drainage system will include a new culvert crossing W. Elverta Road that will continue to convey flow into the RD 1000 network to the north. Due to the proposed size of the development, there will be a significant “hydraulic drop” or difference in gravity storm sewer inverts between the south (upstream) side of the site and the north (downstream) side of the site, which will not be compatible with the relatively shallow depth of the receiving channel. It is expected that lift stations will need to be incorporated into the drainage system design, potentially upstream of on-site stormwater controls (to keep the stormwater controls shallow) or downstream of the controls to lift the outflow up into the discharge system. The transition from an overland flow and open channel-based drainage system to a closed conveyance system will result in shorter drain times and larger peak flows, without mitigation.

The planned development will incorporate perforated gravity underdrains below planned airfield pavement and around structure footers, in accordance with best professional design practices to minimize the risk of structural damage due to groundwater uplift, as well as comply with FAA drainage design guidance. Due to high seasonal groundwater levels anticipated at the project site, it is anticipated that a groundwater pumping system may be required to lower groundwater levels around the post-construction stormwater detention facility. The underdrains and groundwater pumping system will discharge into the on-site stormwater drainage system that will route any collected groundwater to the stormwater outfall. These groundwater collection systems may have a localized impact on groundwater levels.

Drainage patterns will not be significantly changed, as the site will continue draining to the north and discharging to the RD 1000 channel system. The project will incorporate stormwater detention and attenuate peak flows, at minimum to meet RD 1000 requirements. Compliance with these requirements is intended to minimize the potential for impacts to the capacity of the RD 1000 channel network or increase flooding risks within the floodplain. Risks of erosion and siltation within the channel network are expected to be minimal due to overall flows within the RD 1000 channel network being controlled by operations at the RD 1000 pump station (Pumping Plant 2) downstream. The project is not expected to impede or redirect flood flows, as it is not located within a regulatory floodway.

Compliance with existing regulations will ensure that the on-site storm drainage is adequate and impacts to off-site drainage facilities are ***less that significant***.

MITIGATION MEASURES

None required.

IMPACT: VIOLATE ANY WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS

CONSTRUCTION-RELATED WATER QUALITY

Land clearing/grading activities at project construction sites and installing new culverts in existing ditches and canals will disturb the ground surface, remove the vegetative cover, and temporarily increase the potential for soil erosion that could lead to an increase in suspended solids in runoff and local receiving waters. In addition, stormwater runoff quality during construction could be impacted by leaks or spills of fuel or hydraulic fluid from construction equipment or spills of paints, solvents, or other potentially hazardous materials commonly used in construction.

In accordance with the County's Land Grading and Erosion Control Ordinance, a grading plan that includes an erosion and sediment control plan will be prepared and implemented by SCDA. SCDA will also be required to prepare and implement a SWPPP for project construction. Sediment generated by demolition, grading, or construction activities for the proposed project will be contained on the construction and demolition sites and controlled using the BMPs contained in the erosion and sediment control plan and SWPPP. Industry standard BMPs that will be included in the plan to prevent discharge of sediments off site include silt fences, sandbags, fiber rolls, and stabilized construction entrances, and secondary containment for equipment refueling and maintenance. Once construction is complete, the site will be covered with buildings, paving, or other erosion protection material (e.g., geotextiles) or hydroseeded so that sediment production will be negligible. Project construction is not expected to violate any water quality standards because of implementation of these required control plans.

Construction-related stormwater quality impacts are considered ***less than significant***.

OPERATIONAL WATER QUALITY

The project will result in approximately 150 acres of new impervious surfaces. The SQDM requires that Commercial/Industrial Development resulting in more than one acre of impervious surfaces implement source control, hydromodification, low impact development control, treatment control, and full capture trash control.

The project will obtain NPDES permit coverage (either under the general permit or as an individual permit) for discharges associated with industrial activities once the site is operational. Outfall discharges will need to comply with discharge limits or numeric action levels, and regular outfall monitoring will occur to demonstrate compliance. Compliance with the permit will require that the operators of implement a SWPPP that identifies measures to reduce pollutants in industrial stormwater discharges to receiving waters. Dischargers are required to implement non-structural (operational) BMPs (e.g., preventative maintenance, good housekeeping, employee training) to the extent feasible, as well as supplementary structural BMPs as needed to comply with permitted discharge requirements. Oil-water separators will be installed as structural controls in the aircraft fueling areas.

The facility design will incorporate industrial activity-based source control measures, low-impact development measures, stormwater detention facilities, water quality treatment controls, hydromodification controls, and full capture trash control as outlined by the Stormwater Quality Design Manual. The proposed measures are subject to the review and approval of the County Department of Water Resources.

Existing regulations and compliance with the Stormwater Quality Design Manual will ensure that impacts related to operational water quality are ***less than significant***.

Mitigation Measures

None required.

Impact: Develop In An Area That Is Subject To 200-Year Urban Levels Of Flood Protection (ULOP) Area That Could Not Make One Of The Four Required Findings

SMF and the project are located in two ULOP areas within the Natomas Basin; one area is classified as levee-protected and the other is non-levee protected (Plate HY-2 and Plate HY-3). The non-levee protected areas within the project area are associated with the RD-1000 West Drainage Channel floodplain. The non-levee protected area south of I-5 (reference Plate HY-3) represents the modeled flood extent expected until RD-1000's pump stations can pump to the Sacramento River.

The surrounding levee systems protect lands within the Natomas Basin from external flooding by the Sacramento and American Rivers; however, since the basin is relatively flat, localized flooding can occur when runoff exceeds the ability of RD-1000's pumps to discharge it to the Sacramento River.

In 2007, SAFCA commenced the Natomas Levee Improvement Program (NLIP) to meet the 200-year flood protection standard. The project improved levees on the north and portion of the west perimeter of the Natomas Basin. SAFCA completed NLIP construction in 2016.

The American River Common Features Natomas Basin Project is improving the basin's remaining west, east and south levees and is expected to be completed by 2025. The American River Common Features Natomas Basin Project consists of levee improvements around the remainder of the 42-mile Natomas Basin perimeter. The USACE is planning and implementing the remaining elements Construction in Reach D is nearly complete pending installation of monitoring wells. Reach I included a blanket drain constructed under the I-5 overpass that is now complete, with the remainder of the cutoff wall in the reach along the Garden Highway expected to be complete by the end of 2020. Reach B and Reach H construction is also underway. The USACE has completed 65% design of Reach A with 95% design due in August. USACE design work continues on the "Interstate 5 window" and Reach E. The Natomas Basin and its flood control facilities also benefit from the Folsom Dam Modifications.

Plate HY-2: Levee Protected ULOP Areas

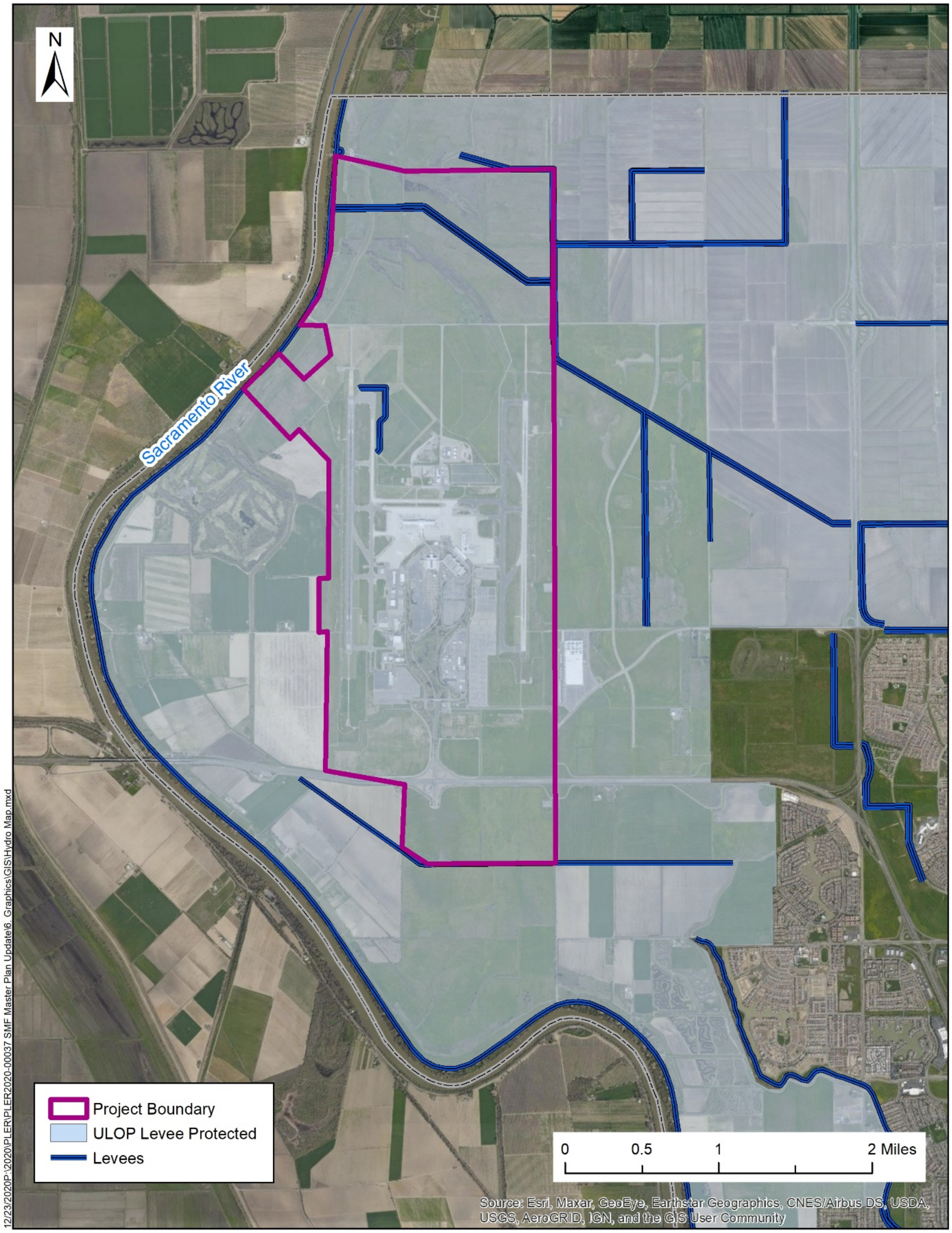
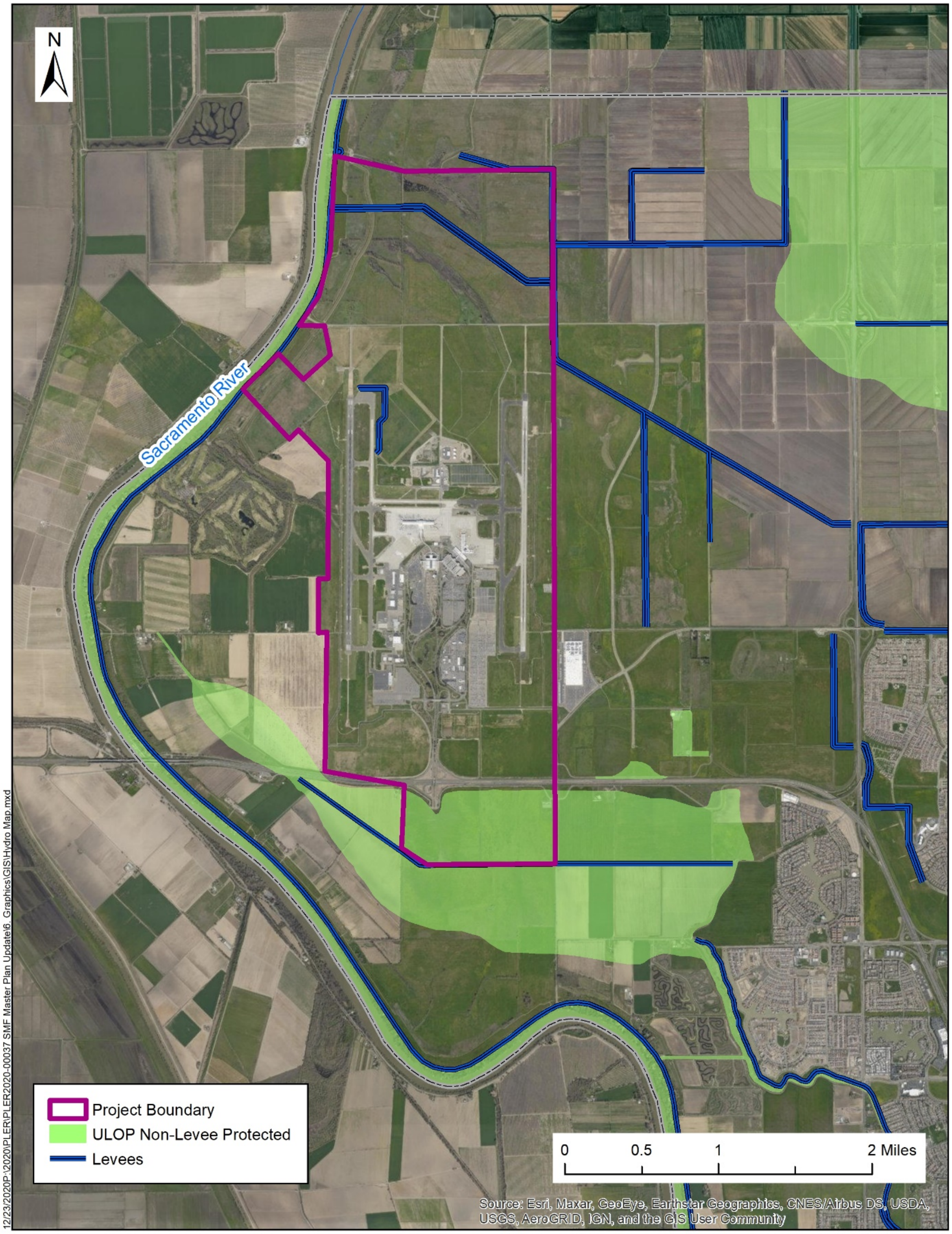


Plate HY-3: Non-Levee Protected ULOP Areas



The Folsom Dam Modifications include three projects: the Folsom Joint Federal Project (JFP), the Folsom Dam Raise, and the Folsom Dam Water Control Manual Update. All three projects are expected to be completed by 2025.

The JFP is a joint project of the US Bureau of Reclamation, the USACE, California Department of Water Resources (DWR), and SAFCA. The JFP created a new, gated auxiliary spillway on the east abutment of the dam, enabling the dam to be operated to accommodate a 200-year flood with discharges no greater than 160,000 cubic feet per second (cfs).

The Folsom Dam Raise will raise the height of the structures comprising Folsom Dam, including the main dam, wing dams, and dikes that contain Folsom Reservoir. Congress has authorized raising the height of the wing dams and dikes by 3.5 feet. This will allow flood operators to store more flood water when forecasted inflows are decreasing (resulting in no imminent threat to the dam) and the additional storage is required to maintain releases from the dam at a level that can be safely contained by the downstream levee system. The project includes improving the flood gates on the main dam.

The Folsom Dam Water Control Manual Update optimizes operations at the dam with the JFP improvements. Once the raise is completed, the manual will be adjusted again to reflect the increased reservoir storage capacity created by that project. With the raise, studies indicate that in a 200-year flood, discharges into the American River will not exceed 115,000 cfs.

While waters from the Folsom Dam do not flow directly into Natomas Basin, improvements to the Folsom Dam benefit Natomas Basin. This is due to the interconnectedness of the two rivers. Since the Natomas Basin drains into the Sacramento River and the American River has a confluence with the Sacramento River, high floodwaters along the American River could potentially impede drainage or prolong flooding upstream on the Sacramento in the Natomas Basin area.

The completion of the NLIP Project and the progress towards expected completion of the American River Common Features Natomas Basin Project and Folsom Dam Modifications in 2025 allows an adequate progress finding (Finding #3). The local flood management agency, SAFCA, has made adequate progress on the construction of a flood protection system that will result in flood protection equal to or greater than the ULOP in urban or urbanizing areas by 2025. Impacts are considered ***less than significant***.

Mitigation Measures

None required.

8 LAND USE

INTRODUCTION

The proposed project updates the current Sacramento International Airport (SMF) Master Plan primarily by revising facility phasing, the expansion and relocation of the previously identified cargo facility, a new consolidated car rental facility, change in location and phase of Concourse C, changing the acreage, location and phasing of the commercial development north of I-5, and removal of the third runway. As stated in the Project Description chapter, only Planning Activity Levels (PALs) 1 through 3, are analyzed at a project level in this document. This chapter addresses potential physical environmental impacts related to land use. Areas of analysis include project compatibility and consistency with adopted land use plans of Sacramento County, consistency with adopted Sacramento County General Plan policies, division or disruption of an established neighborhood, and the displacement of housing.

ENVIRONMENTAL SETTING

SMF is in a region called the Natomas Basin, which covers 55,000 acres of land bordered by the Natomas Cross Canal on the north, the Sacramento River on the west and south, the American River on the southeast, and the Natomas East Main Drainage Canal on the east. Historically, most of the basin was used for agriculture, particularly rice cultivation. As shown on Plate LU-1, most of the land surrounding the airport is still used for agriculture, although crops other than rice (e.g., corn, safflower, and winter wheat) are grown in SMF's vicinity. Urban development has accelerated in the Natomas Basin over the past decade with greater flood protection. As a result, industrial, commercial, and residential developments are planned and underway in SMF's vicinity, as discussed below.

Plate LU-1: Aerial Photo (2018) of Project Site

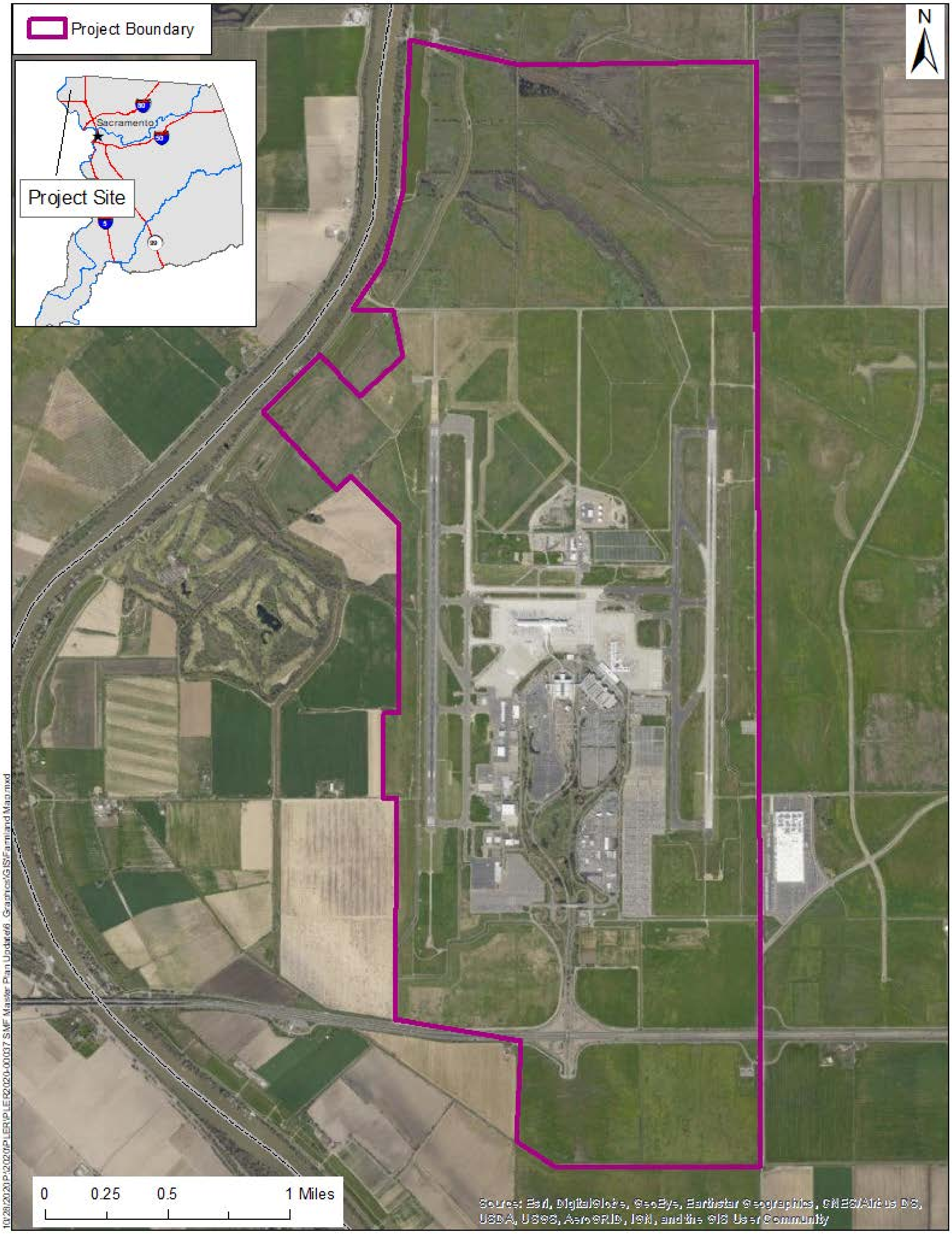


Plate LU-2: General Plan Land Use Exhibit

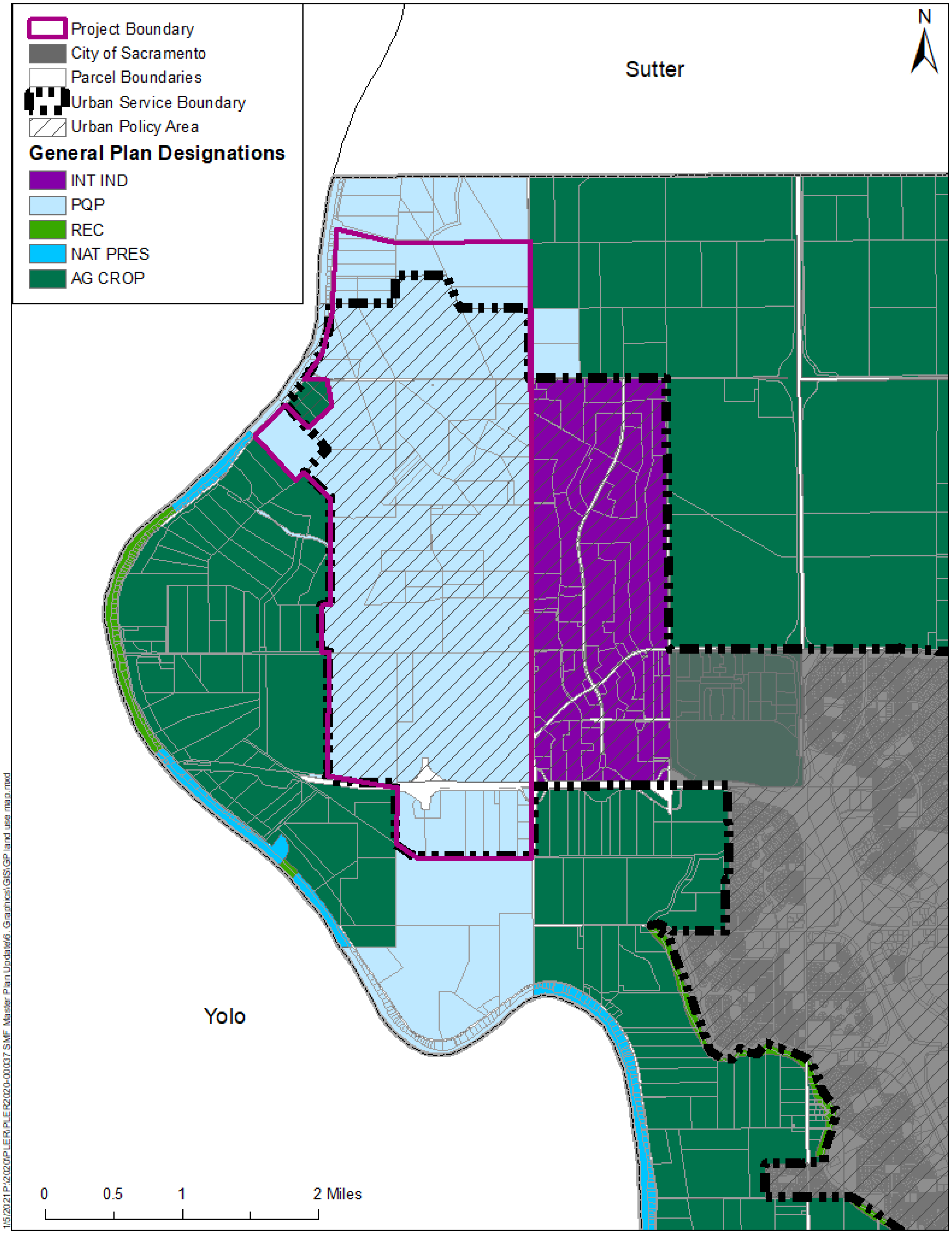
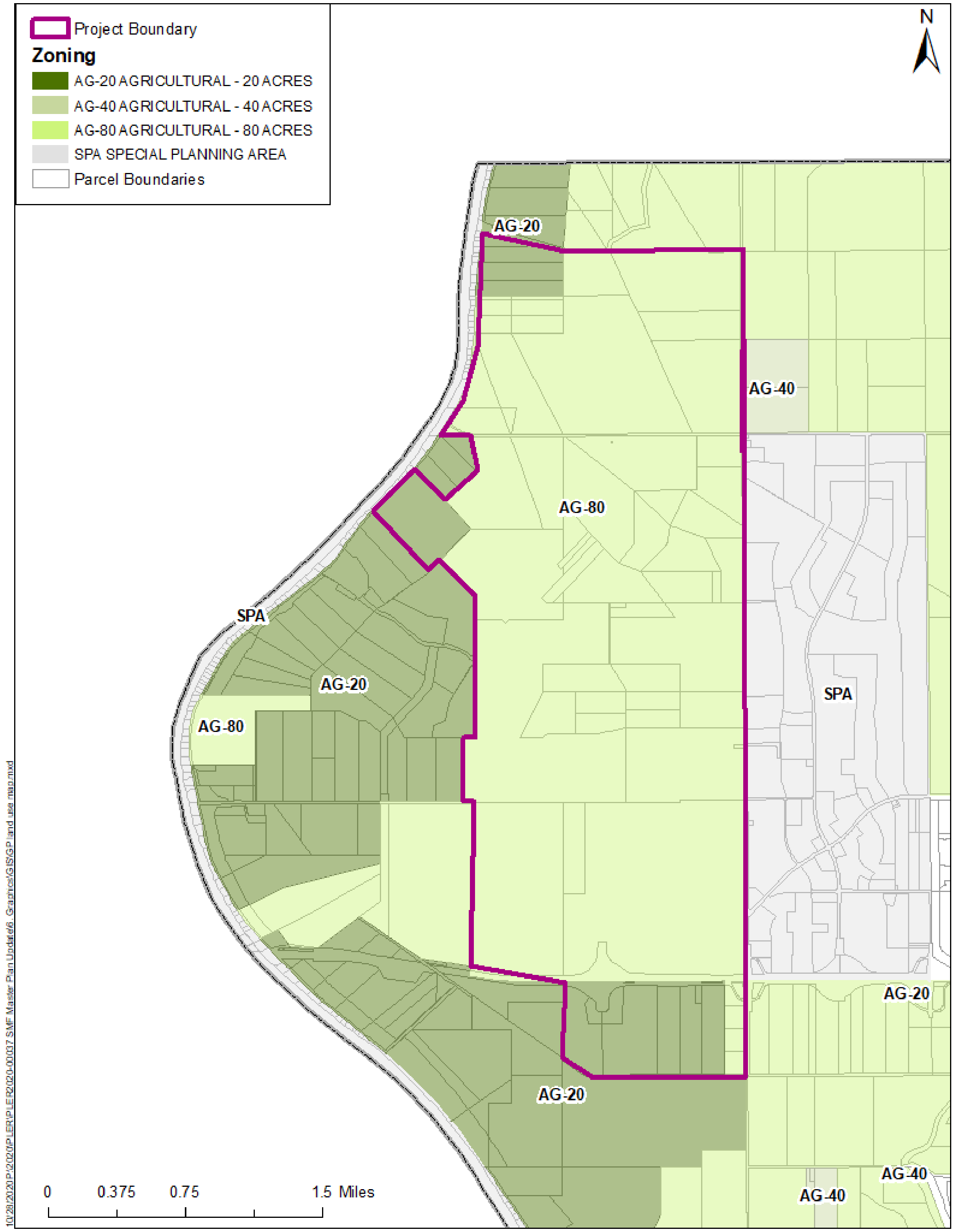


Plate LU-3: Zoning Exhibit



Planned and Proposed Development

Grandpark Specific Plan (formerly Natomas Joint Vision)

The Grandpark Specific Plan (formerly North Natomas Precinct and part of the Natomas Vision Plan) has had a detailed and lengthy history. In September 2014, the Grandpark Landowners' Group submitted an application that was later modified to include urbanization for the unincorporated County area north of Elkhorn Boulevard and east of Highway 99. The application will require the approval of General Plan amendments to move the Urban Services Boundary (USB) and Urban Policy Area (UPA) and to amend the Land Use Diagram, and adoption of the Specific Plan. Other entitlements may be identified as the master-planning process progresses.

The Specific Plan process continues the effort begun many years ago and includes opportunities for public comment and input. The revised Notice of Preparation was released in December 2017. The current land use plan includes approximately 23,892 dwelling units and 6.2 million square feet of commercial, with acreage set aside for a hospital/medical campus, schools, parks, greenbelts, flood control, and open space.

Upper Westside Specific Plan

The Upper Westside Specific Plan (Upper Westside) application was accepted and initiated by the Board of Supervisors on February 26, 2019.

The application will require the approval of General Plan amendments to move the Urban Services Boundary (USB) and Urban Policy Area (UPA) and to amend the Land Use Diagram, and adoption of the Specific Plan. Other entitlements may be identified as the master-planning process progresses.

Upper Westside's initial boundaries encompass approximately 2,066 acres located north of Interstate 80 between the City of Sacramento and the Sacramento River in the Natomas community. This area was formerly referred to as the “Boot Precinct" in the Natomas Joint Vision.

The land use plan in the October 5, 2020 Notice of Preparation includes approximately 9,356 residential units and 3,100,000 square feet of commercial, with acreage set aside for schools, parks, urban farms/greenbelts, flood control, and open space.

Metro Air Park

In 1997, Sacramento County approved a General Plan Amendment and rezoning to amend the Metropolitan Airport/Vicinity Special Planning Area (SPA) for a project known as Metro Air Park. The Metro Air Park SPA is a 1,892-acre site located just east of the airport on the north side of I-5. The SPA is bordered by Elverta Road to the north, Lone Tree Road to the east, Bayou Way to the south, and Power Line Road to the west. The SPA is intended to allow development of a multidistrict industrial business park with complementary recreation and open- space components. The following land uses are proposed for the Metro Air Park: industrial, airport-related, office/light commercial, and recreation/open space. Mitigation for the Metro Air Park project includes expansion of various local infrastructure components based on development triggers and level-of-service monitoring, including the I-5/Metro Air Parkway Interchange (under construction), expansion of the I-5/Airport Boulevard Interchange and the mainline of I-5, and sewage conveyance facilities.

Greenbriar Mixed Use Project

The Greenbriar Mixed Use Project was approved by the Sacramento City Council in May 2017. The project is located in the City of Sacramento at the northwest corner of the intersection of I-5 and SR 70/99. The development proposes the following land uses: approximately 3,000 residential units, 37 acres of commercial land use, one school site, and 49 acres of parks.

North Natomas Community Plan

The North Natomas Community Plan was adopted by the Sacramento City Council on May 3, 1994 (Resolution No. 94-259) and amended by Resolution No. 96-156 on April 16, 1996. The community of Natomas borders the east side of SR 70/99 and the area south of I-5 for a short distance west of SR 70/99. The Community Plan shows light industrial and agricultural uses adjacent to the freeways in the southwestern quadrant of I-5 and SR 70/99. On the east side of SR 70/99, the plan shows low- and medium-density residential. The main goals of the North Natomas Community Plan include a well-integrated mix of residential, employment, commercial, and civic uses.

Sutter Pointe Specific Plan

Sutter Pointe Specific Plan encompasses approximately 7,528 acres of land in south Sutter County. The site is generally bound by Natomas Road on the east and Powerline Road on the west. The southern boundary is approximately 4 miles north of the City of Sacramento and adjacent to the Sutter/Sacramento county line. State Route 99/70 divides the southern portion of the site and serves as the western boundary of the northern portion of the project site.

The project envisions establishment of an eventual city in south Sutter County. The project proposes a diverse mix of land uses, including employment centers, many different housing types, retail shopping villages, recreation amenities, schools, community services, supporting on-and off-site infrastructure, roadway improvements, open space and various public uses.

The Sutter Pointe Specific Plan was approved by the Sutter County Board of Supervisors on June 30, 2009, with an amendment in 2014 to the eastern portion of the Plan.

Regulatory Setting

Federal Aviation Administration

The FAA's foremost mission is to ensure a safe national air navigation system. To meet this objective, 14 CFR Part 77, imaginary surfaces, establish standards for determining obstructions in navigable airspace. These imaginary surfaces extend out from the runway in a manner that reflects where aircraft are likely to fly. The FAA conducts aeronautical studies of proposed activities that could impact airspace. These studies review physical incursions of proposed structures into airspace, interference with radar communications, and any other conditions that might negatively impact air traffic. For projects proposed on airport property, airport sponsors must file documentation with the FAA so that it can complete an airspace review and assess the potential impact of the project on air navigation and issue a determination of hazard or no hazard.

Sacramento County General Plan

Sacramento County's *General Plan* (General Plan) includes countywide goals, objectives, policies, and implementation measures to address the distribution and density of land uses within the County. The *Land Use Element* of the General Plan is intended to foster an orderly pattern of land use that concentrates urban development; enhances community character and identity through the creation and maintenance of neighborhoods; is functionally linked with transit; and protects the County's natural, environmental, and agricultural resources. The following General Plan policies specifically address land use near SMF:

- LU-1. The County will not provide urban services beyond the Urban Policy Area, except when the County determines the need for health and safety purposes and the extension provisions as provided in Policy LU-1.1.
- LU-17. Support implementation of the design review program on a project-by-project basis to ensure that all development applications positively contribute to the immediate neighborhood and the surrounding community.
- LU-31. Strive to achieve a natural nighttime environment and an uncompromised public view of the night sky by reducing light pollution.
- LU-51. New industrial uses using large amounts of material and with low employment densities, such as warehousing, shall be located outside new growth areas and targeted commercial corridors along primary transportation routes such as Interstate facilities, airports, railroads, or navigable waterways, except in areas around airports where adopted policy and/or regulations limit uses and development densities and intensities.
- LU-53. Protect the availability of industrial areas near SMF for airport-related uses.
- LU-71. Reduce the energy impacts from new residential and commercial projects through investigation and implementation of energy-efficiency measures during all phases of design and development.

- LU-72. The County will coordinate with regional planning agencies setting land use and environmental policies and programs and cooperate in the implementation of programs consistent with General Plan policy.
- LU-73. The County will consult with state and federal regulatory and resource agencies during initial review of development projects to identify potential environmental conflicts and establish, if appropriate, concurrent application processing schedules.
- LU-87. Because land use decisions around airports by local governments have a direct impact on an airport's long-term viability and utility, proposed new land use projects and land use practices near airports within Sacramento County shall consider consistency with current federal, State, and local airport land use compatibility regulations, orders, policies, plans, standards and guidance pertaining to public safety and minimization of hazardous wildlife attractants within five statute miles of County airports.

The *Agricultural Element* of the *General Plan* is intended to promote the achievement of two general goals: maintenance of the County's agricultural lands, their agricultural productivity, and natural resource benefits they provide; and maintenance of farming and related industries as a strong and viable sector of the economy of a rapidly urbanizing county. The following General Plan policies specifically address agriculture near SMF:

- AG-1. The County shall protect prime, statewide importance, unique and local importance farmlands located outside of the USB from urban encroachment.
- AG-5. Projects resulting in the conversion of more than fifty (50) acres of farmland shall be mitigated within Sacramento County, except as specified in the paragraph below, based on a 1:1 ratio, for the loss of the following farmland categories through the specific planning process or individual project entitlement requests to provide in-kind or similar resource value protection (such as easements for agricultural purposes):

    - prime, statewide importance, unique, local importance, and grazing farmlands located outside the USB;
    - prime, statewide importance, unique, and local importance farmlands located inside the USB.

  The Board of Supervisors retains the authority to override impacts to Unique, Local, and Grazing farmlands, but not with respect to Prime and Statewide farmlands.

  However, if that land is also required to provide mitigation pursuant to a Sacramento County endorsed or approved Habitat Conservation Plan (HCP), then the Board of Supervisors may consider the mitigation land provided in accordance with the HCP as meeting the requirements of this section including land outside of Sacramento County.

Note: This policy is not tied to any maps contained in the Agricultural Element. Instead, the most current Important Farmland map from the Department of Conservation should be used to calculate mitigation.

- AG 17. The establishment of conservation easements combining preservation of agricultural uses, habitat values, and open space on the same property should be encouraged where feasible.

The *Conservation Element* of the *General Plan* is intended to manage and protect the County's natural resources for the use and enjoyment of present and future generations while maintaining the long-term ecological health and balance of the environment. The following General Plan policies specifically address agriculture near SMF:

- CO-51. Direct development away from prime or statewide importance farmlands or otherwise provide for mitigation as required by AG-5 slowing the loss of additional farmland conversion to other uses.

Sacramento International Airport Land Use Compatibility Plan

The Sacramento International Airport Land Use Compatibility Plan (ALUCP) was first adopted in October 1984 and last amended in 2013. The ALUCP contains land use compatibility guidelines for height, noise, and safety. The ALUCP was prepared by the Sacramento Area Council of Governments (SACOG) Airport Land Use Commission (ALUC). The ALUC is responsible for adopting basic airport land use policies, adopting ALUCPs for area airports, incorporating land use compatibility guidelines established in the ALUCPs into the general plans of the jurisdictions that have land use authority in areas subject to the ALUCPs, and reviewing development proposals and land use plans for areas around the airports.

Impact Assessment Methodology

The land use analysis considers existing and future plans of the jurisdictions in the project study area along with the various environmental analyses conducted in conjunction for this SEIR to determine whether implementation of the proposed project will result in significant land use impacts.

The Natural Resources Conservation Service (NRCS) maintains a list of prime and unique farmlands and farmlands of statewide/local importance for Sacramento, Sutter, and Yolo counties based on soil classifications (NRCS 1972, 1988, and 1993). These soil classifications were incorporated into a Geographic Information System (GIS) and analyzed to determine the amount of prime and unique farmlands and farmlands of statewide/local importance in the project study area. The locations of these soil types were then compared to the study area zoning to determine whether the soils had already been committed to urban development or whether they are planned for agricultural production into the future.

Existing farm operations and local trends in agricultural production in SMF's vicinity were reviewed. The analysis also identified lands owned by Sacramento County and leased for agricultural activities. The review of existing conditions included such factors as soil viability, water availability, farming operation size, crop patterns and values, and population. Other existing programs and plans, including the County Agricultural Commissions; the California Department of Conservation's Farmland Mapping and Monitoring Program; and the existing General Plans for Sacramento County, City of Sacramento, Sutter County, and Yolo County were also reviewed for applicable policies and regulations to determine whether implementation of the project would result in impacts.

THRESHOLDS OF SIGNIFICANCE

Impacts to land uses and agricultural resources are significant if the project would:

1. Physically divide an established community.
2. Cause a significant environmental impact due to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
3. Induce a substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
4. Displace substantial numbers of existing housing or businesses, necessitating the construction of replacement structures elsewhere.
5. Convert Prime, Unique or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
6. Conflict with existing zoning for agricultural use or a Williamson Act contract.
7. Involve other changes in the existing environment that due to their location or nature could result in conversion of farmland to a non-agricultural use.

Significance criteria items 1, 3 and 4 above are not applicable to the project since the project is an established use and there is no new expansion to the project boundaries and does not involve the unplanned population growth or displace existing housing or businesses.

Impacts And Analysis

Impact: Cause A Significant Environmental Impact Due To Conflict With Any Land Use Plan, Policy, Or Regulation Adopted For The Purpose Of Avoiding Or Mitigating An Environmental Effect

Sacramento County Land Use Plans

The Sacramento County General Plan Land Use designation is Public/Quasi Public and the County Zoning Code designates SMF's property north of I-5 as AG-80, and property south of I-5 as AG-20 and AG-80, which permits a minimum lot size of 20 or 80 acres (respectively) for agricultural land uses (Plate LU-2 and Plate LU-3). However, this zoning designation also permits public uses such as the airport. Therefore, the proposed project facilities shown in the Master Plan Update are consistent with the provisions of these zoning designations.

Beyond zoning consistency, the prior Master Plan EIR contained Mitigation Measure LU-1 to move the Urban Services Boundary (USB) south of I-5 to include the proposed parking and commercial uses. The USB defines the ultimate urban boundary for the County. Within the USB is the Urban Policy Area (UPA), which defines the limits of urban services (water and sewer). These boundaries are shown on Plate LU-2. The movement of the USB was accomplished through resolution 2008-0391. However, the Urban Policy Area was not moved through this process and remains along the I-5 corridor. The General Plan now contains policies specific to the movement of the UPA to address logical growth, smart growth principles, and fiscal neutrality. General Plan Policy LU-1 directs the County's urban development to areas inside the UPA; however, Policy LU-12 does allow for consideration of new development that is contiguous to the UPA when there is a logical extension of services. The project does show future commercial development south of I-5 in PAL 4. As stated in the Project Description chapter, development proposed in PAL 4 is not considered in this document due to the 20 year planning timeframe. If PAL 4 becomes ripe for development, additional environmental review and an amendment to the General Plan will be necessary to determine consistency with General Plan Policies LU-12, 13, 119, 120, and 123 to move the UPA.

The proposed project is consistent with Sacramento County General Plan and Zoning Code and impacts are ***less than significant***.

Sacramento International Airport Land Use Compatibility Plan

The Airport Land Use Compatibility Plan (ALUCP) is intended to guide development in and around the airport to ensure that development is compatible with airport operations. The proposed Master Plan Update (MPU) alters the size and location of commercial uses within the airport property. The proposed land uses have been evaluated using the methods presented in the ALUCP with regard to noise contours, safety zones and height restrictions.

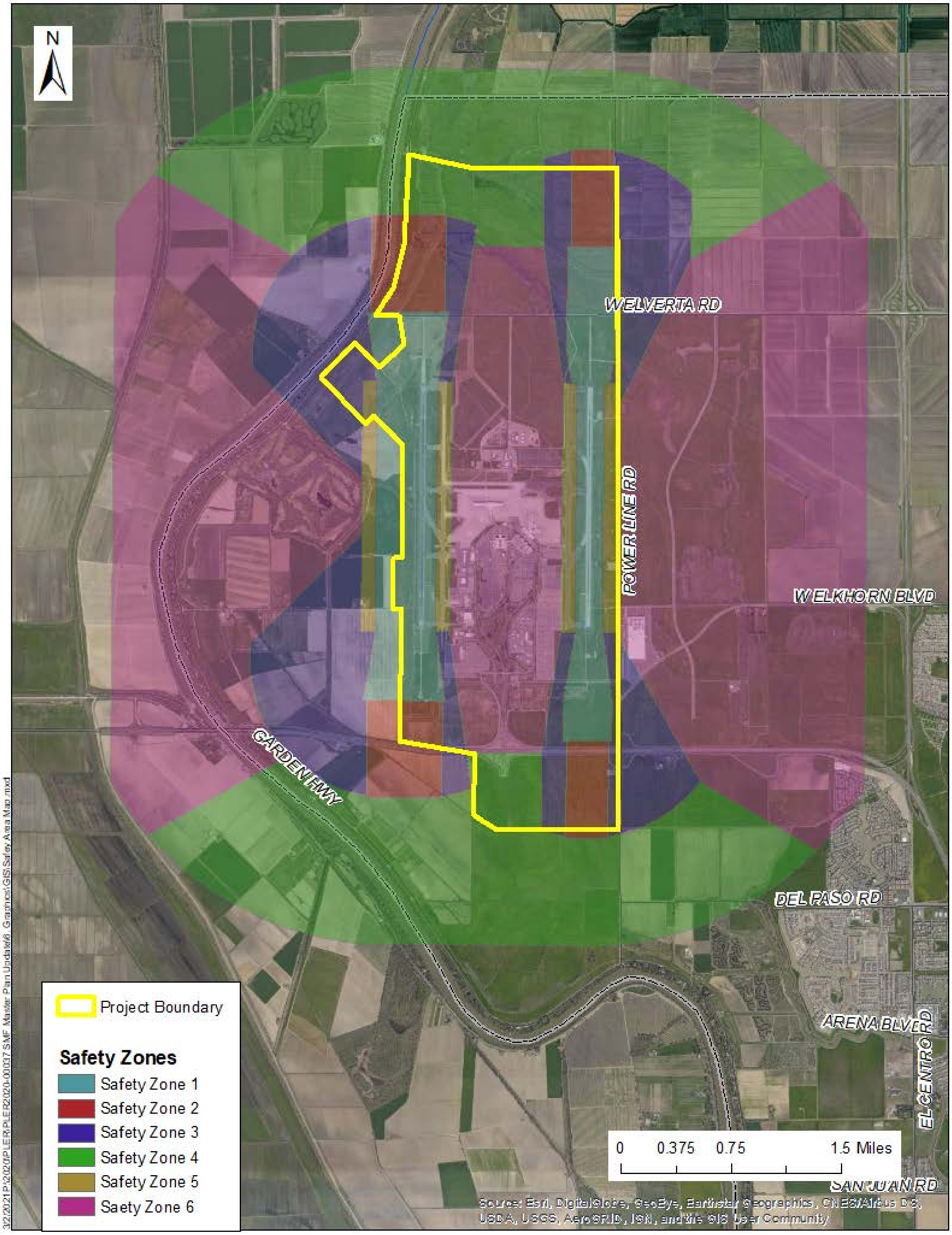
According to Table 1: Noise Compatibility Criteria of the SMF ALUCP, all of the proposed uses are conditionally acceptable in community noise equivalent level (CNEL) 65 -75 for exterior noise levels. This includes the proposed cargo facility, fire station, commercial land uses, and airport terminal. Proposed parking facilities are acceptable in all CNEL noise contours. Interior noise levels must not exceed 50 decibels, which can be accomplished through standard building construction techniques. Land use compatibility impacts associated with noise contours are ***less than significant***.

According to Table 2: Safety Compatibility Criteria of the SMF ALUCP, land use compatibility is determined based on the safety zone in combination with the site intensity (number of person(s) per acre) and floor area ratios. Table LU-1 below identifies the MPU facility and compatibility with safety zone and Plate LU-4 shows the safety zone map.

Table LU-1: Airport Land Use Compatibility Plan Safety Zone

MPU Facility	MPU PAL	Safety Zone	Compatible
Cargo Facility	PAL 1	6	Yes; standard intensity rates and F.A.R. 100%
Terminal B Expansion Concourse C	PAL 2	6	Yes; standard intensity rates and F.A.R. 100%
Economy Parking Lot Expansion	PAL 2	3	Yes
Community Fire Station	PAL 1	6	Yes; standard intensity rates and F.A.R. 100%
Commercial Development North of Elverta Road	PAL 3	3, 6	Zone 3 – Conditional Yes; standard intensity rates and restricted F.A.R. based on use type Zone 6 – Yes; standard intensity rates and F.A.R. 100%
Commercial Development North of I-5	PAL 2 & 3	3, 6	Zone 3 – Conditional Yes; standard intensity rates and restricted F.A.R. based on use type Zone 6 – Yes; standard intensity rates and F.A.R. 100%

Plate LU-4: SMF ALUCP Safety Zones



All of the proposed MPU facilities and land uses are located in safety zones in which the use is normally or conditionally permitted. Since specific uses have not been identified within the proposed commercial development areas, all development is reviewed by SCDA staff for consistency with the SMF ALUCP prior to building permit approval. Land use compatibility impacts associated with airport safety zones are ***less than significant***.

The final compatibility policy of the SMF ALUCP is airspace protection, or the height of nearby structures to ensure that there are no conflicts with low-flying aircraft. Some of the proposed commercial land uses are within the Critical Airspace Area, which have much lower building height restrictions – generally 100 to 177 feet. Outside of the Critical Airspace Area, building height restrictions decrease as you move further away. The proposed cargo facility will have the cargo apron within the Critical Airspace; however, this is not a conflict. The cargo warehouse building is located just outside of the Critical Airspace Area and building height is restricted to 177 feet.

Since specific commercial uses and building design have not been identified, all development is reviewed by SCDA staff for consistency with the SMF ALUCP prior to building permit approval. Land use compatibility impacts associated with airspace protections are ***less than significant***.

Nearby Community or Specific Plans

Urban development is encroaching towards the airport. Within the City of Sacramento, the North Natomas Community Plan guides urban development in particular with respect to SMF. The most recent approved development is the Greenbriar mixed use plan. Given the distance of SMF and the proposed Master Plan Update project from the North Natomas Community Plan boundary, no conflicts with that Community Plan or the Greenbriar Master Plan are anticipated. Within unincorporated Sacramento County, two Specific Plans - Upper Westside and Grandpark, are going through the planning process and would introduce new homes and businesses within the airport policy planning area. Again, these Specific Plans must adhere to the SMF ALUCP policies, thereby reducing future land use conflicts with airport operations. Land use compatibility impacts with surrounding land use plans are ***less than significant***.

Mitigation Measures

None recommended.

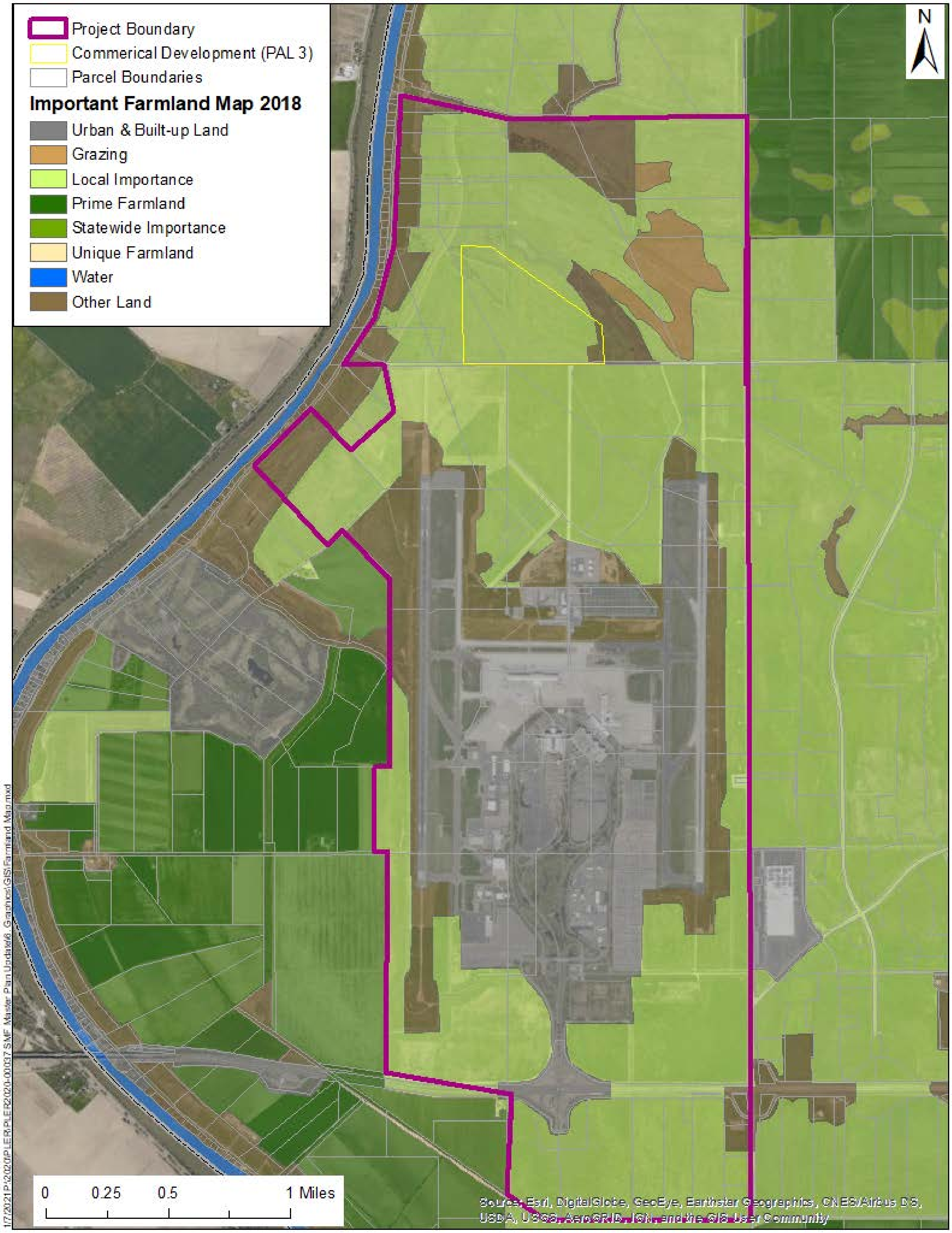
Impact: Convert Prime, Unique Or Farmland Of Statewide Importance To Non-Agricultural Uses

According to the 2018 Department of Conservation Farmland Map for Sacramento County, the lands within and surrounding the airport are classified largely as Farmland of Local Importance (Plate LU-5). This is a change from the 2007 EIR in which the lands were classified as Prime or Statewide Importance. As with the prior EIR analysis, land within the Airport Operation Area (between I-5 and Elverta Road), is considered urban for the purpose of this analysis. The area between the runways, while shown as

Farmland of Local Importance, is heavily managed to reduce wildlife conflicts and will not be used as farmland while the airport is in operation. Thus only the land north of Elverta Road is considered in this analysis.

The 2007 EIR identified significant impacts to farmlands associated with proposed remote economy parking lot and commercial uses south of I-5 (only Phase 1 and 2). Farmland conversions associated with Phase 3 projects were not identified in the 2007 EIR. Mitigation measure LU-2 was adopted to mitigate this significant impact. These [parking and commercial] facilities have not been developed and therefore the mitigation has not been completed. Similar to the prior EIR, this document does not evaluate impacts to farmland for facilities identified in PAL 4 (including all commercial development south of I-5).

Plate LU-5: 2018 Farmland Map



The proposed project will convert approximately 135 acres of Farmland of Local Importance north of Elverta Road to urban uses during the proposed Master Plan/planning horizon. Farmland conversion is proposed to occur in PAL 3. Pursuant to County General Policy AG-5, conversion of over 50 acres of Farmland of Local Importance within the USB is considered a significant impact and is required to be mitigated at a 1:1 ratio. Mitigation is recommended, which will replace LU-2, to compensate for the loss of approximately 135 acres of farmland north of Elverta Road prior to land development. Impacts to farmlands of local importance are reduced with implementation of recommended mitigation, but not to a level of less than significant. Impacts are ***significant and unavoidable***.

MITIGATION MEASURES

LU-1. Prior to conversion of approximately 100 acres of Farmland of Local Importance north of Elverta Road, an equal amount of land must be set aside with permanent farmland conservation easement.

IMPACT: CONFLICT WITH EXISTING ZONING FOR AGRICULTURAL USE OR A WILLIAMSON ACT CONTRACT

The SCDA owns approximately 6,000 acres in and around SMF. None of the parcels are under a Williamson Act Contract. As mentioned in the land use setting and farmland impacts discussions above, SMF is currently zoned either Agricultural 80 or Agricultural 20 (AG-80 or AG-20). The project will permanently convert approximately 135 acres of agriculturally zoned lands to urban uses. Agricultural practices on these lands are limited to crops that are not wildlife attractants, generally dry land crops. Further, the County leases the lands to local farmers, so when development is to occur, the leasing contracts will not be renewed. The conversion of the land to urban uses will not conflict with surrounding agricultural uses as most of the land is owned by the County and managed to reduce wildlife attractants. Impacts associated with potential conflicts with existing agricultural uses or Williamson Act contracts are ***less than significant***.

MITIGATION MEASURES

None recommended.

9 NOISE

INTRODUCTION

The prior Sacramento International Airport (SMF) Master Plan EIR Noise chapter evaluated potential noise impacts associated with the Master Plan. The noise analysis evaluated the existing airport noise environment and future noise environment for planning years 2013 and 2020, with and without the project. The proposed project does not substantially increase the number of flight operations used to determine potential noise impacts. The methodologies and some analysis from the prior EIR remain appropriate for this project. Since the certification of the prior EIR, the SMF Airport Land Use Compatibility Plan (ALUCP) was updated, which established new noise contours for the airport based on the theoretic capacity. The theoretic capacity is determined on the assumption that all airport facilities are built. Since the prior EIR, the following planning documents have been updated:

- The SMF Airport Land Use Compatibility Plan (adopted 2013)
- The Sacramento County General Plan (adopted 2011)

This chapter will look at the proposed Master Plan Update and potential noise impacts pursuant to the current ALUCP and the General Plan Noise Element. The methods describing the basic principles of noise are detailed in the prior EIR and are still applicable to this project, but are not repeated in this document and is hereby incorporated by reference.

ENVIRONMENTAL SETTING

SMF is the main the generator of noise in this area of the County. Other existing noise in SMF's vicinity is produced by vehicular traffic, agricultural equipment, and aircraft overflights from other airports in the region. Interstate 5 (I-5) is a major highway in close proximity to the airport; additional vehicle traffic exists on Garden Highway, Power Line Road, Bayou Way, and Elverta Road. The main land use in SMF's vicinity is agricultural. However, industrial and residential development is encroaching from the east.

Agricultural land uses produce noise from the use of various types of equipment. Aircraft overflights are under the control of Northern California TRACON. Several published routes result in aircraft flying over SMF. The minimum altitude for these aircraft is 18,000 feet above mean sea level (MSL).

EXISTING NOISE ENVIRONMENT

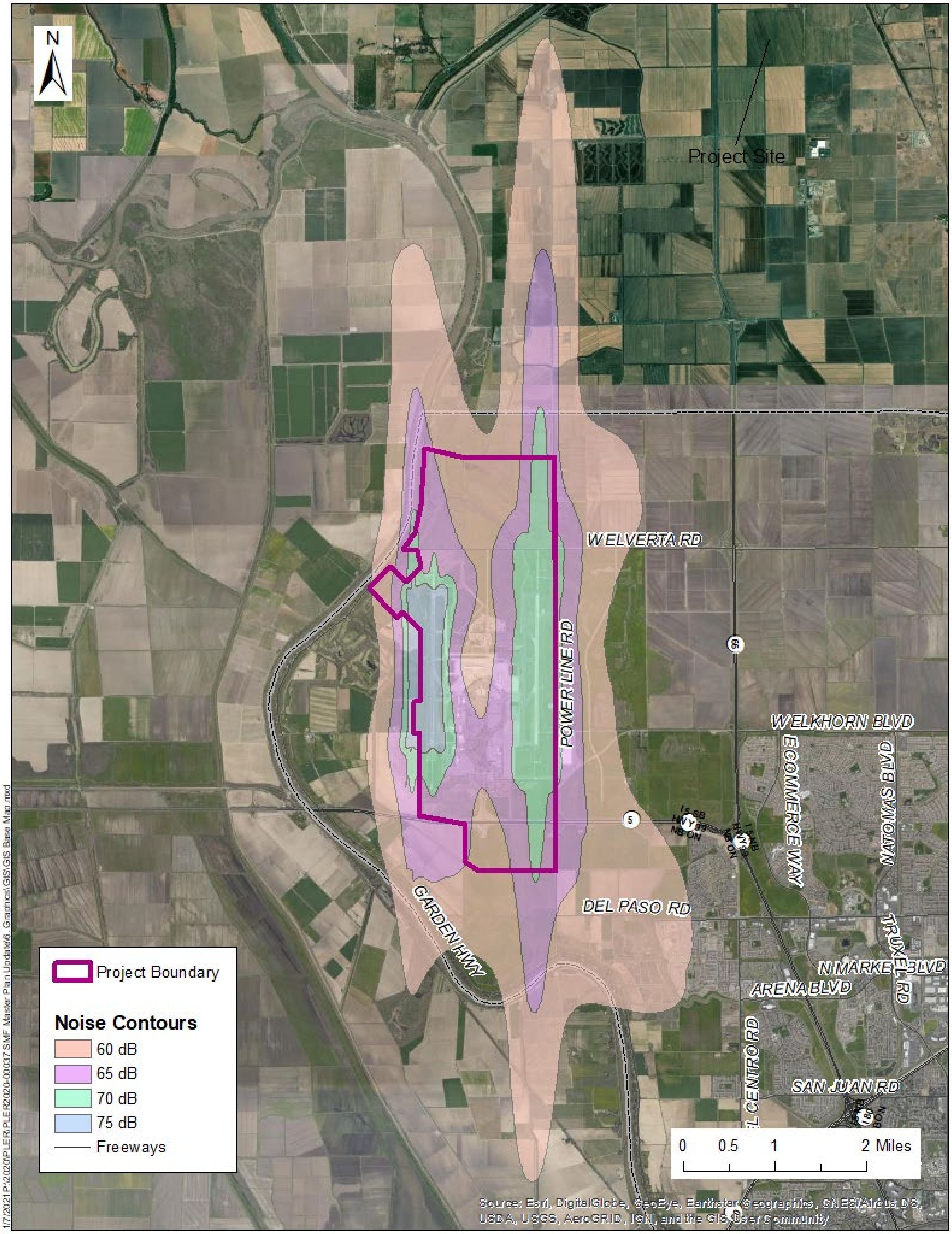
A noise analysis, *SMF Cargo Facility Project and Master Plan Update*, prepared by Kimley Horn Consultants, identifies the existing noise environment in and around SMF (Appendix NO-1). The existing noise environment consists of aircraft noise, automobile traffic, and agricultural equipment. Table NO-1 below presents the current traffic noise levels along various roadways.

Table NO-1: Existing Roadway Noise

Roadway Segment	ADT	dBA CNEL 100 feet from Center line
Elverta Rd., Garden Highway to Earhart Dr.	563	49.6
Elverta Rd., Earhart Dr. to Power Line Rd.	876	51.5
Elverta Rd., Power Line Rd. to Metro Air Pkwy.	1,232	53.0
Elverta Rd., Metro Air Pkwy. to Lone Tree Rd.	1,812	54.7
Elverta Rd., Lone Tree Rd. to SR-99	1,790	54.7
Power Line Rd., Elverta Rd. to Road A	539	49.4
Power Line Rd., Road A to Road D	539	49.3
Power Line Rd., Road D to Skyking Rd.	539	49.2
Power Line Rd., Skyking Rd. to Elkhorn Blvd.	1,023	51.9
Metro Air Pkwy., Elverta Rd. to Road A	602	49.7
Metro Air Pkwy., Road A to Road D	602	49.5
Metro Air Pkwy., Road D to Skyking Rd.	602	49.4
Metro Air Pkwy., Skyking Rd. to Elkhorn Blvd.	1,710	53.8
ADT= average daily trips; dBA= A-weighted decibels; CNEL= community noise equivalent level		
Source: Based on traffic data within the VMT Assessment & Local Access, Safety, and Circulation Study, prepared by Kimley-Horn, 2020.		

The nearest sensitive receptors are residences along the Garden Highway, approximately 0.5 miles to the west and south. The nearest schools are located approximately 2 miles to the southeast as measured from the southern end of the east runway. Airport noise contours are presented in Plate NO-1.

Plate NO-1: SMF Noise Contours



Regulatory Setting

Federal Aviation Administration

FAA Order 1050.1E and FAA Order 5050.4B indicate that a significant noise impact would occur if the analysis shows that a proposed action would cause noise-sensitive areas to experience an increase in noise of 1.5 dB or more at or above CNEL 65 dB noise exposure when compared to the No-Action Alternative (No Project Alternative) for the same time frame (FAA 2004). FAA Order 1050.1E considers that if an increase of 1.5 dB occurs at any noise-sensitive area within the CNEL 65 dB contour, further analysis is warranted. To comply with FAA guidance provided in Order 1050.1E and the recommendations of the 1992 Federal Interagency Committee on Noise, noise-sensitive areas between CNEL 60 and 65 dB should be evaluated for an increase of 3 dB or greater if an increase of 1.5 dB occurs at any noise-sensitive area within the CNEL 65 dB contour. Noise-sensitive areas between CNEL 45 and 60 dB should be evaluated for an increase of 5 dB or greater if an increase of 1.5 dB occurs at any noise-sensitive area within the CNEL 65 dB contour. In compliance with FAA Order 5050.4B, the assessment of aircraft noise levels utilizes flight track data from SMF's flight track monitoring system, while the analysis is primarily based upon the CNEL metric.

Local

Sacramento County General Plan

Sacramento County's General Plan (adopted November 2011) includes countywide goals, objectives, policies, and implementation measures to address noise within the County. The Noise Element (amended December 2017) is intended to protect the citizens of the County from the harmful and annoying effects of exposure to excessive noise. Further, the Noise Element must protect the economy of the County by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses. The follow policies are applicable to the proposed project:

NO-2. Proposals for new development within Sacramento County which may be affected by aircraft noise shall be evaluated relative to Table 4: Land Use Compatibility for Aircraft Noise, except in the following case. Development proposals which may be affected by aircraft noise from Sacramento International Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference.

NO-8. Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

Sacramento International Airport Land Use Compatibility Plan

Airports occupy a special place in the planning process because of their potential impacts on surrounding land uses. The Sacramento County Airport Land Use

Commission (ALUC) is charged with preparing an Airport Land Use Compatibility Plan (ALUCP) for SMF. The Sacramento Area Council of Governments (SACOG) acts as the ALUC for the Sacramento County area. The ALUCP addresses issues of airport noise and safety, with the intent of protecting airport operations from encroachment by non-compatible land uses, as well as protecting the citizens on the ground from the impacts of excessive noise and aircraft accidents. The compatibility plan is based on the long-range master plan prepared by the airport operator and must reflect growth out at least 20 years. Policies included in the ALUCP regulate only the land use surrounding an airport and not the airport policies or the number of takeoffs and landings.

State law requires that certain types of projects be referred to the ALUC for a determination of their consistency with an adopted ALUCP. Such projects include amendments to the general plan, or a community plan, and adoption or amendments to zoning ordinances that affect an area within an airport planning boundary as established by the ALUCP. If the ALUC determines the proposed project to be inconsistent, the County may overrule the ALUC by a two-thirds vote, after a public hearing, and based on specific findings.

Significance Criteria

In accordance with Appendix G of the State CEQA Guidelines, a project would be considered to have a significant effect if it would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Generation of excessive groundborne vibration or groundborne noise levels.
- Expose people residing or working in the project area to excessive noise levels.

Excessive noise is defined as a change in noise that exceeds the County's General Plan Policies, Noise Ordinance, or Airport Land Use Compatibility Plan.

Impacts And Analysis

The SMF ALUCP is one of the guiding land use planning documents used for new development in or around airports. As stated in the regulatory section, the SMF ALUCP was adopted in 2013 after the Airport Master Plan was adopted in in 2007. The ALUCP determined airport noise contours based on estimates derived from the assumption that all foreseeably planned facilities are implemented (theoretic capacity). The assumption includes activity levels at the airport well beyond the planning period of the proposed project. As the project will not meet or exceed the activity levels determined utilizing the ALUCP, the noise contours identified in the ALUCP remain appropriate for noise and land use compatibility planning purposes.

Separate from SCDA airport operations, the FAA designed, environmentally reviewed, and implemented a new flight system, the Next Generation Transportation System (NextGen), to improve flight dependability and efficiency throughout the Country. This system was implemented by the FAA in Sacramento in 2015 and altered the altitude at which planes turned on their destination course. The area navigation (RNAV) departure procedures call for aircraft to climb on heading to 540 feet at which point they turn on course. The previous departure procedures called for aircraft to climb on heading until 600 feet before commencing a turn. The general flight track patterns have not materially changed, but have been concentrated along the primary departure routes.

Since the FAA's implementation of the NextGen flight system, existing residences within the Natomas community have complained about a perceived increase in aircraft noise, aircraft frequency and a decrease in aircraft altitudes. The SCDA has relayed these comments to the FAA and the FAA is reviewing the information. The noise contours in the SMF ALUCP do not reflect the changes implemented by the FAA NextGen system, as those changes were evaluated under a separate FAA environmental review and determined by the FAA to have no significant impact (http://www.metroplexenvironmental.com/norcal_metroplex/norcal_docs.html). **This background has been included for informational purposes only and does not pertain to the current project proposal, as outlined in the project description. The components of the updates to the SMF Master Plan facilities that have potential to generate noise are discussed further below.**

Impact: Generate A Substantial Temporary Increase In Ambient Noise Levels In The Vicinity Of The Project In Excess Of Standards Established In The Local General Plan Or Noise Ordinance, Or Applicable Standards Of Other Agencies

The Sacramento County General Plan Policy NO-8 and Sacramento County Code 6.68, Noise Ordinance, regulate construction within the unincorporated areas of Sacramento County. According to the Noise Ordinance, construction activities are exempted as long construction takes place during daytime hours (7am to 8pm Monday through Friday and 8am to 6pm Saturday). If construction must take place during nighttime hours, additional measures are required to reduce the impacts to surrounding sensitive receptors. These measure may consist of flashing lights instead of back-up beepers, portable sound barriers, temporary relocation of residences.

Construction associated with the proposed project will occur within SMF properties; there are no sensitive receptors within these properties. Construction will take place during daytime hours and is exempted from the Noise Ordinance and General Plan. Nighttime construction is not known at the Master Plan level; however, it is generally not necessary for typical development projects. Further, the nearest sensitive receptors are located along the Garden Highway approximately 0.5 miles from the proposed commercial developments and would not be impacted by nighttime construction if it was determined necessary. The project will not result in a substantial increase in temporary construction noise, and impacts are ***less than significant***.

MITIGATION MEASURES

None required.

IMPACT: GENERATE A SUBSTANTIAL PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES

The project consists of multiple developments within the airport, which could result in the permanent increase in noise levels. These projects include:

- New cargo facility east of Runway 16R (PAL 1)
- Improvements to Elverta Road (PAL 1)
- Elkhorn Road Extension (PAL 1)
- Commercial development North of Elverta Road, and north of I-5 (PALs 2 and 3)

With the exception of Metro Airpark (industrial and commercial uses) located immediately east of SMF, land immediately surrounding the airport is agricultural or recreational uses. Ambient noise levels off-airport are defined by aircraft operations as shown in the published noise contours for the airport[1] (Plate NO-1) and by traffic generated noise along I-5 and other smaller roadways. As stated in the FAA guidance, a 1.5 dB change in ambient noise above the 65 dB noise contour is considered a significant change for sensitive receptors. There are no sensitive receptors within the 65 dB noise contour. The proposed runway extension (16L/34R) was identified in the prior EIR and the theoretical noise contours included in the ALUCP include the runway extension. **<u>Therefore, there are no new noise impacts associated with aircraft operations.</u>** According to the ALUCP and County General Plan policies, no residential uses are allowed within the 65/60 dB noise contour respectively.

<u>This analysis focuses on the noise impacts associated with the proposed changes of the Master Plan Update listed above.</u> New uses within the Airport Operation Area (generally between the two runways, Elverta Road and I-5) would not increase the ambient noise for sensitive receptors. ~~This area of the airport contains the highest noise contours and the proposed projects within this area would not substantially increase the ambient noise environment.~~ **<u>A</u>**s shown in the noise analysis prepared for the cargo facility, the proposed loading dock with 141 truck bays would generate noise upwards of 68 dBA 30 feet from the facility. With standard attenuation rates (4 to 6 dB attenuation per doubling distance), the noise (likely not discernable over aircraft noise) would be well below the General Plan standards for outdoor residential

[1] These noise contours account for the theoretic capacity of the airport, which this project does not change. Perceived changes in ambient noise associated with the FAA NextGen System are not reflected in this exhibit.

uses 0.5 mile or more away **and would not substantially increase the ambient noise environment for sensitive receptors**.

The proposed commercial uses north of Elverta Road and north of I-5 **are consistent with the ALUCP and** would introduce new noise sources associated with loading docks, parking facilities and mechanical equipment. As shown in the noise analysis, noise associated within these uses generally range from 52 dBA for air conditioners and speech, to 61 dBA for slamming doors. Again applying standard attenuation rates, sensitive receptors 0.5 mile or more away from these commercial areas would not experience a significant increase to the ambient noise.

The proposed project will generate new trips on local roadways. The increase in trips corresponds to an increase of traffic generated noise to nearby sensitive receptors. The increase in trips was evaluated for Elverta Road, Metro Air Parkway and Power Line Road. The noise analysis indicates that the largest increase will be on Elverta Road between Earhart Drive and Power Line Road. This is largely due to the trips associated with the new cargo facility. This segment will experience an increase of approximately 9 dBA which would normally be considered a significant impact (change greater than 5 dB); however, this area does not have any receptors and has a higher acceptable outdoor noise level due to the agricultural land use designations.

Permanent increases to ambient noise associated with the construction of the cargo facility, new commercial uses, roadway improvements and realignments, and runway extension, in and surrounding SMF are expected. Since the nearest sensitive receptors are located over 0.5 miles to the west and south along the Garden Highway and 2 miles to the southeast in the Natomas community, the proposed project will not increase the ambient noise and impacts are ***less than significant***.

Mitigation Measures

None required.

Impact: Generate Excessive Groundborne Vibration Or Groundborne Noise Levels

The proposed project involves the construction of new buildings and infrastructure. Methods of construction are not known at this time in the planning phase, but construction methods involving pile driving or directional tunneling may generate some level of groundborne vibration or noise. There are no sensitive receptors within 0.5 miles of proposed construction areas and therefore, impacts associated with groundborne vibration or noise is ***less than significant***.

Mitigation Measures

None required.

Impact: Expose People Residing or Working in the Project Area to Excessive Noise Levels

The proposed project is updating the size, location or timeframe of some of the facilities and supporting ground uses identified in the SMF Master Plan. The project does not include residential uses other than the hotel (identified for PAL 4 and is not discussed in this document), nor are any of the nearby residential uses located within the 65 dB noise contour. Standard building construction techniques would reduce interior noise levels to meet General Plan and ALUCP policies of 45 dB for buildings within the Master Plan Area.

Many of the proposed airport facilities are located adjacent to the existing terminals, parking lots/structures, or airport support facilities. The proposed cargo facility adjacent to Runway 16R, and the identified commercial land use areas, would place people working within 60-75 dB noise contours depending on the specific location within the airport. Even though specific development and uses are not known for any of the identified commercial land use areas, application of standard building construction techniques should achieve General Plan and ALUCP policies for interior noise levels (45 dB).

Employees working in noise contours above the 70 dB, may be exposed to noise in excess of applicable standards and Occupational Safety and Health Administration (OSHA) safety standards. Employers have to comply with OSHA standards for their personnel generally requiring personal protective equipment (PPE) including hearing protection.

Compliance with General Plan and ALUCP policies for interior noise levels and with OSHA standards and use of PPE ensures persons will not be exposed to excessive noise levels and impacts are ***less than significant***.

Mitigation Measures

None required.

10 PUBLIC SERVICES/UTILITIES

INTRODUCTION

The Sacramento International Airport (SMF) Master Plan EIR certified in 2007, included a discussion of public services which support the airport. This chapter updates the information contained in the prior EIR and analyzes impacts associated with the proposed project; particularly, the proposed cargo facility, new concourse, consolidated car rental facility, and commercial development. Public service providers were given the opportunity to submit comments during the Notice of Preparation and comments were received from Sacramento Municipal Utility District and Sacramento Area Sewer District.

ENVIRONMENTAL SETTING

ENERGY SERVICES

Electrical power is supplied to SMF from the Sacramento Municipal Utility District (SMUD). SMUD generates, transmits, and distributes electric power to a 900-square-mile service area that includes Sacramento County and a small portion of Placer County. SMUD obtains its electricity from diverse resources including hydrogeneration and cogeneration plants, wind, solar, and biomass/landfill gas power, and power purchased on the wholesale market.

SMUD provides power to SMF from its Power Line-Elkhorn Substation, located on the eastern boundary of SMF. The Airport is serviced by the substation from two 69 kilovolt (kV) feeder lines rated to supply 25 megavolt amperes (MVA). Electricity is distributed around SMF primarily by underground cables to avoid aviation safety hazards.

Solar electric panels installed at SMF take advantage of Sacramento's abundant sunshine. The 7.9-Megawatt (MW) solar farm is a photovoltaic system located on two sites with more than 23,000 solar panels mounted on equipment that tracks the sun's path from east to west over the course of the day. The facility consists of a 15-acre site east of Aviation Drive and a 20-acre site west of runway 16L-34R within the north airfield area. Installation of the solar electric panels was a collaborative effort between the Sacramento County Department of Airports (SCDA) and energy company NRG. NRG owns and operates the facility and sells electricity to SMF at a reduced rate under a 25-year Power Purchase Agreement (PPA). Pacific Gas and Electric Company (PG&E) supplies natural gas to SMF. The Airport is connected to a six-inch diameter, 60-psi (pounds per square inch) PG&E distribution pipeline, which supplies a four-inch distribution line. The four-inch gas main that serves the Airport travels from the south along El Centro Boulevard, crosses Elkhorn Boulevard, continues north along Earhart Drive and Airport Boulevard, and crosses to Lindbergh Drive.

WATER SUPPLY

Until 2006, SMF was supplied by four on-site potable water wells. However, in early 2006, this system was replaced by connection to the City of Sacramento's water supply due to reliability and water quality considerations. This connection was completed with the activation of two potable water storage tanks located south of I-5 at the intersection of Power Line Road and Bayou Way. The facility is monitored collaboratively by SCDA and the Sacramento County Water Resources Department.

The former domestic water wells have been retained to provide landscape irrigation and auxiliary water for backup fire suppression water. During early 2006, an additional water well was installed near the intersection of Power Line Road and North Bayou Way and water well number 2 (located in the Daily B parking lot) was connected to the landscape irrigation system via a 40-foot pipe extension. These well connections replaced the landscape irrigation water provided by Natomas Central Mutual Water Company (NCMWC). An additional well is located near the intersection of Earhart Drive and Delta Road. This well is used for construction water requirements at SMF.

SEWER SERVICE

Prior to the late 2000s, wastewater at SMF was handled by an on-site treatment system that included four wastewater aeration ponds located north of I-5. However, the intensive industrial, commercial, and office development in the 1,887-acre Metro Air Park Special Planning Area that borders SMF along Power Line Road between I-5 and Elverta Road included various modifications to local infrastructure based on development triggers and level-of-service monitoring. One of those modifications, sewer service, allowed for SMF to transition to off-site wastewater collection service and eliminate use of the existing on-site wastewater ponds.

The off-site sewage infrastructure, accommodates sewage flows from SMF and Metro Air Park, consists of an 8.73 million gallon/day (mgd) lift station and two 16-inch-diameter force mains to sanitary sewer mains (Stantec 2005). SMF receives wastewater collection service from the Sacramento Area Sewer District (SASD). Due to the generally flat slope of the site, the on-site collection system is relatively shallow but provides enough slope to convey sewage primarily by gravity flow. The only area from which wastewater is not transported solely by gravity flow is in the north airfield, where wastewater is transported to a point north of the Biffy Station utilizing force main down to a gravity main. The sewer system gravity mains then converge before connecting into the SASD's 18-inch Meister Way Connection.

FIRE PROTECTION

Federal regulations (14 Code of Federal Regulations 139) specify fire-fighting and emergency response requirements for commercial airports like SMF. The minimum requirement for Airport Rescue and Fire Fighting (ARFF) stations is based on aircraft size and frequency of aircraft operations. **SMF operates and maintains an ARFF Station to the required ARFF index, currently "C"**~~The ARFF station at SMF is designed and operated at ARFF Index C~~, which is designed for an average of five or more daily departures of aircraft from 126 to 159 feet in length. The ARFF station is located north of the terminal complex along Earhart Drive. It is staffed 24 hours a day and has fire-fighting vehicles capable of delivering at least 3,000 gallons of foam to fight an aircraft fire. Typical response time to emergencies on the airfield is three to four minutes. Sacramento County Airport Fire currently has 33 staff providing ARFF, structural and wildland fire suppression, and emergency medical services.

SMF also receives service from the City of Sacramento Fire Department. The Sacramento Fire Department station closest to SMF is Station 3, which is located approximately five miles to the west at 7208 West Elkhorn Boulevard. This station is typically staffed with one captain, one apparatus operator, and one firefighter. Normal response time to airport incidents is three to five minutes (Craig 2007).

Airport Fire~~ARFF~~ is the first responder to all medical, fire, vehicle, and aircraft incidents at SMF. **Airport Fire**~~ARFF~~ works closely with the Sacramento Fire Department to efficiently deal with airport incidents. **Airport Fire**~~ARFF~~ is typically the lead for all airport incidents and relies on the Sacramento Fire Department for backup support (McCasland 2007).

LAW ENFORCEMENT

Law enforcement at SMF and the area surrounding the Airport is provided by the Sacramento County Sheriff’s Department Airport Division. This division has 45 sworn officers and typically five to six deputies and sheriffs are on duty at any given time. The Division’s station is located on the airport at 6900 Airport Boulevard. The normal response time to an incident at SMF is 3 minutes (Graber 2007).

SOLID WASTE SERVICE

Commercial (nonresidential) and residential solid waste collection in Sacramento County are handled differently. Commercial solid waste collection is regulated by the Sacramento Regional Solid Waste Authority (SWA). Private waste haulers in the SWA region, which includes the Airport, must obtain a SWA Non-Exclusive Commercial Solid Waste Collection Franchise for any commercial, industrial, restaurant, construction, or apartment/multifamily residential waste collection services. Although the County of Sacramento owns Kiefer Landfill, the current SWA Franchisees are not required to dispose of waste at that landfill. Therefore, commercial solid waste from the SWA region is disposed of in various landfills in California and Nevada.

The Sacramento County Waste Management and Recycling Department (DWMR) owns and operates the County’s Kiefer Landfill in Sloughhouse and the North Area Recovery Station, a transfer station in North Highlands that disposes waste at Kiefer Landfill. Kiefer Landfill is classified as a Class III municipal solid waste landfill facility and is permitted to accept general residential, commercial, and industrial refuse for disposal including municipal solid waste, construction and demolition debris, green materials, agricultural debris, dead animals, and other designated debris. Waste is received at DWMR disposal facilities from a variety of users including SWA Franchisees and commercial or residential self-haul customers.

REGULATORY SETTING

STATE OF CALIFORNIA

CALIFORNIA INTEGRATED WASTE MANAGEMENT ACT AND CALRECYCLE

The Integrated Waste Management Act of 1989 is the result of two pieces of legislation, AB 939 and SB 1322, which created the California Integrated Waste Management Board (which has been renamed CalRecycle). The Integrated Waste Management Act mandated a goal of 25 percent diversion of each city's and county's waste from disposal by 1995 and 50 percent diversion in 2000, with a process to ensure environmentally safe disposal of waste that could not be diverted.

CalRecycle is the State agency designated to oversee, manage, and track California's 92 million tons of waste generated each year. They provide grants and loans to help California cities, counties, businesses and organizations meet the State's waste reduction, reuse and recycling goals.

Senate Bill 1016, signed into law on September 26, 2008, represents a fundamental shift in the way local jurisdictions are measured for compliance with state diversion mandates. Jurisdictions are now evaluated based on the implementation of programs that measure per capita waste disposal, rather than diversion percentage.

LOCAL

SACRAMENTO REGIONAL SOLID WASTE AUTHORITY

The Sacramento Regional Solid Waste Authority (SWA) is a joint powers authority of Sacramento County and the City of Sacramento. SWA was formed in December 1992 to assume the responsibility for solid waste, recycling, and disposal needs for businesses and apartment complexes in the Sacramento area. The SWA regulates commercial solid waste collection by franchised haulers and offers recycling services to multi-family dwelling units.

SWA ORDINANCES

The SWA has adopted three recycling ordinances that target three distinct waste streams: (1) The Business Recycling Ordinance, adopted in 2007 for commercial generators who subscribe to 4 cubic yards or more of refuse service per week; (2) The Certification of Construction and Demolition (C&D) Debris Sorting Facilities Ordinance, adopted in 2008, that creates a program for mixed C&D facilities that dovetails with both City and County C&D Ordinances for builders; and (3) The Multifamily Recycling Ordinance, adopted in 2009, that requires owners of multifamily properties with over 5 units to subscribe to a recycling service for their tenants.

SACRAMENTO COUNTY GENERAL PLAN

Sacramento County's *General Plan* (adopted November 2011), amended *Public Facilities Element* (amended December 17, 2019) includes countywide goals, objectives, policies, and implementation measures to address and/or protect community services. The Public Facilities Element is intended to promote the achievement of three general goals: (1) developing environmentally sound, economically efficient, and financially equitable water facilities; (2) implementing safe, efficient, environmentally sound public sewer systems and treatment facilities for the urban environment; and (3) appropriately siting energy facilities that efficiently and safely produce/distribute energy without compromising environmental quality or human health.

SIGNIFICANCE CRITERIA

The public services analysis considered existing and future plans from the jurisdictions in the project area along with the various environmental analyses conducted for this SEIR to determine whether implementation of the proposed project will result in impacts to public services.

Impacts to public services or utilities are considered significant if a project would:

1. Result in inefficient, wasteful, and unnecessary consumption of energy.
2. Require the construction of new or the expansion of existing water facilities that could potentially cause significant construction-related environmental effects. Or result in a service demand that cannot be met by existing or reasonably foreseeable future service capacity.
3. Require the construction of new or the expansion of existing wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Or result in a service demand that cannot be met by existing or reasonably foreseeable future service capacity.
4. Result in the need for additional landfill capacity for solid waste disposal.
5. Result in substantial adverse physical impacts associated with the provision of emergency services.
6. Result in substantial adverse physical impacts associated with the provision of law enforcement services.
7. Result in substantial adverse physical impacts associated with the provision of schools, park and recreational services, and libraries.

Item number 7 is not applicable to the proposed project as there are no schools, park and recreational services, or libraries within the SMF Master Plan Update area.

Impacts And Analysis

Impact: Result In Inefficient, Wasteful, And Unnecessary Consumption of Energy

The proposed project will result in construction of new buildings (i.e., new concourse, consolidated rental car facility, cargo facility and new commercial development). These new facilities will increase consumption of electricity at SMF. For example the proposed cargo facility may require between 4-5 thousand megawatts per year and the other Master Plan Update elements may require 26 thousand megawatts per year[1]. The construction of the proposed cargo facility will require a new conduit from the existing substation at Elverta Road and Power Line Road. Further, expansion of the SMUD Power Line-Elkhorn Substation will likely be required to serve the increase energy demands associated with the Master Plan Update. With the proposed expansions to the existing substations, infrastructure and distribution needs of the proposed project are met. Therefore, the proposed project will have a ***less than significant*** impact on electrical supply and distribution.

SMF used about 498,031 therms of natural gas in 2018. Based on existing conditions (existing utility records), the average demand for natural gas is estimated at 0.825 therms per passenger. Therefore, gas consumption at SMF with the Master Plan project is projected to increase to 607,326 therms in 2023. By 2038, SMF is projected to consume 839,438 therms of gas with the project. This increase in gas use will not require expansion of existing infrastructure and will not place a significant demand on PG&E's gas supplies. Furthermore, future buildings (excluding the new concourse) will be required to comply with Tier 1 Best Management Practices for greenhouse gas – no natural gas (reference the Climate Change chapter). As better technologies become available, new construction and renovations will aim to reduce reliance on natural gas to the maximum extent feasible.

Standard practice for the design of SCDA facilities calls for early coordination with utility providers, including PG&E, to ensure that facility siting and construction comply with Public Utilities Commission clearance requirements. These standard practices will be used for the design of Master Plan elements. Impacts associated with energy uses are ***less than significant***.

Mitigation Measures

None recommended.

Impact: Require The Construction Of New Or The Expansion Of Existing Water Facilities That Could Potentially Cause

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[1] Determined from the results of the CalEEMod analysis in the *GHG Emissions Assessment* prepared by Kimley-Horn and Associates (Appendix CC-1).

Significant Construction-related Environmental Effects. Or Result In A Service Demand That Cannot Be Met By Existing Or Reasonably Foreseeable Future Service Capacity

Potable water is supplied to SMF via a water supply pipeline, two storage tanks, and a booster pump station. A new 16-inch transmission main (T-main) was installed to deliver water to SMF's two new storage tanks south of I-5. The two tanks have a combined storage capacity of 2.8 million gallons to provide required capacity for fire flow demands, peak flow equalization, and emergency backup. The pumping station, with a capacity of 5,780 gallons per minute, is used to boost the pressure to the required 60 pounds per square inch to ensure adequate water supply for fire suppression. Water is delivered to SMF's distribution loop by an underground 24-inch main pipeline.

The water supply system is designed to meet the airport's projected 2038 maximum day demand of 3,708 gallons per minute (Sacramento County Department of Airports, 2019). This projection is based on conversion of the existing central chillers at Terminal B to a cooling tower system that uses substantially less water[2] and separation of the irrigation water system so that irrigation will be supplied from the existing wells at the airport. The Terminal B chiller conversion was completed in June 2006, and the irrigation supply source previously provided by the Natomas Central Mutual Water Company was permanently deactivated in early 2007.

The proposed Master Plan Update will require the construction of new water service lines to serve Master Plan elements; however, as stated above the water supply system is designed to meet the project demand. For these reasons, the Master Plan Update project will have a ***less than significant*** impact on water supply.

Mitigation Measures

None recommended.

Impact: Require The Construction Of New Or The Expansion Of Existing Wastewater Facilities That Could Potentially Cause Significant Construction-related Environmental Effects. Or Result In A Service Demand That Cannot Be Met By Existing Or Reasonably Foreseeable Future Service Capacity

The sewer infrastructure on SMF property is categorized as private. The existing agreement between SASD and SCDA allow for discharges up to 1.4 million gallons per day (MGD) into a SASD manhole at the intersection of Meister Way and Powerline Road (Letter from Carl Mosher from SASD's Christoph Dobson, dated 7/3/2013). Based

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[2] When in operation prior to installation of a cooling tower in mid-2006, the chiller plant uses approximately 35 percent of SMF's current potable water supply (HDR 2003).

on information from January 1, 2018 through July 31, 2019, the SMF metered wastewater flow was between 0.18 and 0.27 MGD. The projected peak flow in 2038 is 0.34 MGD. **New projects under this Master Plan Update, which are not directly related to passenger growth include the cargo facility and commercial uses north of I-5 and north of Elverta Road. Using the equivalent sewer demand (ESD) factor for commercial land uses (6x total acreage) and multiplying it by the domestic flow factor for each ESD (310 gallons per day)[3], the total additional sewer outflow from the Master Plan Update projects is 0.615 million gallons per day.** Therefore the capacity will be sufficient to accommodate existing and planned future wastewater flow from the Airport.

Table PS-1 summarizes wastewater generation projections for the airport through 2038. These projections took into consideration the proposed Master Plan project. SRCSD expanded the Sacramento Regional Wastewater Treatment Plant's capacity to treat 218 MGD of wastewater in light of the anticipated future development in Sacramento County, including the SMF Master Plan project. Because of the new off-site sewage infrastructure and expanded capacity of the plant, the proposed project will not have an impact on regional wastewater treatment facilities.

Table PS-1: SMF Wastewater Generation

Passenger Enplanements		
	2018	**PAL 4 (2038)**
Peak Flow (mgd)	0.20	0.34
Passenger Enplanements per year used for wastewater generation study	6.03 million	10.17 million
New Master Plan Projects		
Cargo Facility	**0.16 mgd**	
Commercial Land Uses (245 acres)	**0.455 mgd**	
		Total 0.955 mgd

Source: Sacramento County Department of Airports, 2019. **SASD System Capacity Plan 2020 Update, December 2020.**

The airport currently practices water conservation (e.g., water recycling facilities at the rental carwash facilities and groundwater for irrigation) and will continue to do so in the future. Other measures that may be implemented include retrofitting all older fixtures within the terminal with low flow fixtures or installing waterless toilets. Impacts associated with sewer services are ***less than significant***.

[3] Sacramento Area Sewer District System Capacity Plan Update 2020, December 2020.

MITIGATION MEASURES

None recommended.

IMPACT: RESULT IN THE NEED FOR ADDITIONAL LANDFILL CAPACITY FOR SOLID WASTE DISPOSAL

The Master Plan project will generate construction debris from the demolition of existing facilities and construction of new facilities. As is the case with all large construction projects in Sacramento County, some of the debris, such as clean soil and possibly concrete, will be recycled by the construction contractors for use at other construction sites needing fill material. The remainder of the debris will be transported to one or more licensed landfills in California and/or Nevada. With the large number of licensed haulers in the County and the availability of many licensed landfills for disposal of construction debris, the quantity of material generated by the Master Plan project is not expected to significantly impact the capacity of any disposal facility.

From January 2018 through December 2018, SMF generated 2,139.6 tons of solid waste from other airport operations. Solid waste collection services at SMF are provided by Atlas Disposal Industries, LLC. (Atlas), under contract to SCDA. The waste collected by Atlas is hauled to Yolo County Central Landfill.

SMF had a total of 6,031,630 passenger enplanements in 2018. Assuming that the amount of solid waste generated at the airport is linear to the number of passengers, the airport generated approximately 0.71 pound of waste per passenger. With the proposed project, base case enplanement forecasts indicate that passenger enplanements will reach 8,196,600 in 2028 and 10,166,400 in 2038. Based on waste generation of 0.71 pound/passenger, the airport will produce about 768 tons more of solid waste in 2028 with the proposed project. By 2038, the airport will produce about 1,467 tons more of solid waste with the project than without the project. It is expected that the increased volume of solid waste created with the project can continue to be disposed of by Atlas, or other contracted provider, without significantly affecting the operating life of their landfills. The projected volume in 2038 may actually be less than this amount because or recycling program implementations.

SMF currently employs several resource conservation and waste minimization programs including:

- Integrated Waste Management Program – used motor oil and fuel filters (from trucks, equipment, aircraft, etc.), diesel flush fluids, and road sealant collected at SMF are stored for appropriate disposal and/or recycling.

- Paper Recycling Program – SMF participates in the County of Sacramento’s program for collecting and recycling office white paper. WMI provides bins for collection of cardboard.

- Terminal and Concourse Mixed Recycling Program – SMF recycling efforts include recycling bins in concourse and terminal areas for use by the public. Separated recycling containers are placed by trashcans for the collection and recycling of beverage containers, cardboard, mixed white/colored paper, newspaper, magazines, etc.

- Grass Recycling Program – beginning in 1989, SMF purchased equipment to collect grass clippings for landscaping/mulch use. The program was later expanded to include wood chipping as well.

- Hazardous Materials Program – in an effort to reduce the costs associated with storing and disposing of used chemical-based solvents, SMF converted to water-based solvents for cleaning vehicle parts.

- Electrified Jet Bridges and Preconditioned Air – SMF installed 400 hertz power and preconditioned air units on all 32 passenger boarding bridges (jetways), thereby eliminating the need for aircraft to use on-board auxiliary power units (APUs) during the passenger loading and unloading process. An APU on a typical Boeing 737 (the most common aircraft at SMF) can consume up to 34 gallons of jet fuel per hour.

- Light Program – SMF recycles fluorescent bulbs and high intensity discharge lamps. This program also includes proper disposal of used ballasts that contain polychorinated biphenyls. If the ballasts contain polychorinated biphenyls, they are stored in a metal container for pickup by a qualified contractor.

- Battery Program – one-time use alkaline batteries and rechargeable batteries (lithium-ion, nickel-cadmium, etc.) from electronic devices are stored in drums and containers for pickup by a qualified contractor for recycling and/or disposal.

With or without the proposed project, SCDA will continue these programs as well as seek other means of recycling solid waste. Impacts associated with solid waste are ***less than significant***.

Mitigation Measures

None recommended.

Impact: Result In Substantial Adverse Physical Impacts Associated With The Provision of Emergency Services

At present the only fire station in the project area is the ARFF facility at SMF. A community fire station located near the airport entrance is planned to provide fire and paramedic services to recent and ongoing commercial, industrial, and residential development near SMF. Currently, no fire station in this portion of the Natomas Basin can quickly respond to structural fires and emergency medical situations. This facility is also needed to provide similar services in a timely fashion to SMF's current landside facilities (terminals, offices, parking structures, and roadways). For these reasons, the construction of a new community fire station at the northwestern corner of Lindbergh and Crossfield Drives is proposed for PAL 1. The fire station is to be built by the City of Sacramento Fire Department on County-owned land pursuant to a ground lease that will be developed with the City of Sacramento. The land will not be conveyed to the City. A community fire station located near the airport entrance will provide “first responder” fire and paramedic services to the airport landside areas of the airport and surrounding off-airport development, and allow the ARFF facility to be dedicated exclusively to aviation-related incidents. Construction of a new community fire station together with the ARFF facility at SMF will ensure adequate fire protection and emergency response to the airport and existing and planned commercial, industrial, and residential development in SMF’s vicinity. Impacts to fire protection are ***less than significant***.

Mitigation Measures

None recommended.

Impact: Result In Substantial Adverse Physical Impacts Associated With The Provision of Law Enforcement Services

Law enforcement demand will increase in proportion to passenger activity and increases in commercial and industrial uses at SMF with the proposed project. The project will require expansion of the existing Sheriff’s Department station, as well as additional officers and equipment as travel demand increases at the airport. At present, the space used by the Sheriff’s Department is divided among several buildings at the airport. With the proposed terminal modifications, the airport will have sufficient room to provide the Sheriff’s Department with contiguous space for law enforcement activities. SCDA will continue to coordinate with the Sacramento County Sheriff’s Department to ensure adequate facilities and personnel as the use of the airport increases over time. This impact is ***less than significant***.

Mitigation Measures

None recommended.

11 TRANSPORTATION AND CIRCULATION

INTRODUCTION

The certified FEIR for the Sacramento International Airport (SMF) Master Plan Transportation and Circulation Chapter evaluated environmental impacts using the Level of Service (LOS) significance threshold. Since the certification of the prior FEIR, State Senate Bill 743 was passed, changing how transportation and circulation impacts are assessed under CEQA. Pursuant to SB 743, impacts are no longer based on LOS and are evaluated using another metric. Although there is no requirement to use a particular metric, the Governor's Office of Planning and Research (OPR) suggests using the metric vehicle miles traveled (VMT).

The proposed project is largely a re-evaluation of the phasing of the proposed Master Plan facilities. Changes which would alter the prior EIR's transportation analysis include:

- The forecasted enplanement (passenger) growth over the 20-year planning horizon and subsequent addition of facilities and employees to support that passenger growth. All other land use modifications identified in the updated Master Plan are assumed to serve the airport itself;
- The development of near-term Air Cargo Facilities; and,
- The development of Commercial Land Uses in/near the study area over the planning horizon.

A technical report, *VMT Assessment, Local Access, Safety, and Circulation Study for the SMF Master Plan Update, Sacramento, CA*. August 3, 2020, prepared by Kimley-Horn and Associates, hereinafter called the Transportation Study, was prepared for the proposed project. Information contained in the Transportation Study has been incorporated into the following analysis and is included as Appendix TC-1.

TRANSPORTATION SETTING

SMF is located in Sacramento County, approximately 10 miles northwest of downtown Sacramento. The airport occupies an approximately 6,000 acres that is generally bounded by Power Line Road to the east, Garden Highway to the west, the Sacramento River to the west and south, and West Riego Road to the north.

Primary access to the Airport and terminal facilities is provided from the south via the I-5 interchange with Airport Boulevard, with an alternate route provided by Bayou Way. Access to airport facilities on the north portion of the Airport is provided via [West] Elverta Road and Earhart Drive. Elverta Road connects to State Route 99 (SR-99) several miles east of the Airport.

~~Currently, t~~**<u>The</u>** Metro Air Parkway interchange ~~is being~~ construct~~ed~~**<u>ion,</u>** approximately one-half mile east of Airport Boulevard interchange**<u>, is complete and the interchange is open</u>**.

REGULATORY SETTING

STATE OF CALIFORNIA

SENATE BILL 743

In accordance with Senate Bill (SB) 743, which reformed the process for California Environmental Quality Act (CEQA) review of transportation impacts to align with greenhouse gas emissions reduction goals, the OPR identified VMT as the key metric to measure transportation impacts of new development under CEQA. SB 743, will "more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions" (Cal. 2013). To support these goals, as of July 1, 2020, automobile delay and LOS performance measures may no longer be used to determine the transportation impacts of land development projects under CEQA. However, this requirement does not modify the discretion lead agencies have to develop their own methodologies or guidelines, or to analyze impacts to other components of the transportation system, such as walking, bicycling, transit, and safety.

LOCAL

SACRAMENTO COUNTY GENERAL PLAN

The Sacramento County General Plan Circulation Element focuses on providing roadways for growing automobile demands and alternative modes of transportation. This requires improving those alternatives through regional coordination, improved funding, better land use and design, and fair pricing. The overarching goals of the element seeks a balanced transportation system that moves people and goods in a safe and efficient way that minimizes environmental impacts, supports urban land uses, and serves rural needs. Supporting General Plan policies include conducting planning for roads, parking, clean alternative fuel and low emission vehicles, and other methods consistent with achieving air quality goals; conducting land use and transportation planning with a regional perspective; and mitigating new development traffic impacts.

On October 7, 2020, the Sacramento County Board of Supervisors approved an amendment (Resolution Number 2020-0652) to the Sacramento County General Plan's Circulation Element to establish VMT significance thresholds as the metric to be utilized in order to analyze traffic impacts.

Goals and policies of the Sacramento County General Plan relating to traffic, circulation and transportation applicable to the project are listed below:

CI-1. Provide complete streets to provide safe and efficient access to a diversity of travel modes for all urban, suburban and rural land uses within Sacramento County except within certain established neighborhoods where particular amenities (such as sidewalks) are not desired. Within rural areas of the County, a complete street may be accommodated through roadway shoulders of sufficient width or other means to accommodate all modes of travel.

CI-3. Travel modes shall be interconnected to form an integrated, coordinated and balanced multi-modal transportation system, planned and developed consistent with the land uses to be served.

CI-5. Land use and transportation planning and development should be cohesive, mutually supportive, and complement the objective of reducing per capita vehicle miles travelled (VMT). The standards shown in Table CI-1 shall be used as thresholds of significance for all projects subject to CEQA. Where the VMT level standards of Table CI-1 are predicted to be exceeded, all feasible mitigation measures shall be included to reduce projected VMT levels.

CI-9. Plan and design the roadway system in a manner that meets Level of Service (LOS) D on rural roadways and LOS E on urban roadways, unless it is infeasible to implement project alternatives or improvements that would achieve LOS D on rural roadways or LOS E on urban roadways. The urban areas are those areas within the Urban Service Boundary as shown in the Land Use Element of the Sacramento County General Plan. The areas outside the Urban Service Boundary are considered rural.

CI-10. Land development projects shall be responsible to provide improvements which address the project's adverse effects on local and regional roadways.

CI-21. Collaborate with neighboring jurisdictions and other agencies to achieve land use patterns and densities in areas planned for development that support transit services, preserve adequate rights-of-way, and enhance transit services in the designated transit corridors.

SIGNIFICANCE CRITERIA

In accordance with Appendix G of the State CEQA Guidelines, a project would be considered to have a significant effect if it would:

1. Conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) – measuring transportation impacts individually or cumulatively, using a vehicles miles traveled standard established by the County;

2. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;

3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or,

4. Result in inadequate emergency access.

Sacramento County has updated the Transportation Analysis Guidelines (September 10, 2020, herein referred to as 'Guidelines'), to incorporate the requirements under SB 743. Table TC-1 presents the screening criteria for projects that are expected to result in less than significant VMT impacts based on project description, characteristics, and/or location. If a component of a mixed-use project meets these screening criteria, only the component, not the entire project, would be screened from CEQA transportation analysis.

Table TC-1: Sacramento County Transportation Analysis Guidelines Screening Criteria for CEQA Transportation Analysis for Development Projects

Type	Screening Criteria
1. Small Projects	• Projects generating less than 237 average daily traffic (ADT)
2. Local-Serving Retail[1]	• 125,000 square feet of total gross floor area or less in an infill setting; OR 200,000 square feet of total gross floor area or less in a greenfield setting; OR if supported by a market study with a capture area of 3 miles or less; AND • Local Serving: Project does not have regional-serving uses, as shown in Appendix A.
3. Local-Serving Public Facilities/Services	• Day care center • Public K-12 schools • Neighborhood park (developed or undeveloped) • Community center • Post offices • Police and fire facilities • Libraries • Government offices (primarily serving customers in-person) • Utility, communications, and similar facilities • Water sanitation, waste management, and similar facilities

4. Projects in VMT-Efficient Areas	• Residential Located in a VMT Efficient Area: Based on an approved screening map. • Office/Business Professional Employment Project Located in a VMT Efficient Area: Based on an approved screening map. • Industrial Employment Project Located in a VMT Efficient Area: Based on an approved screening map.
5. Projects Near Transit Stations	• High-Quality Transit: Located within ½ a mile of an existing major transit stop[2] or an existing stop along a high-quality transit corridor[3]; AND • Minimum Gross Floor Area Ratio (FAR) of 0.75 for office projects or components; AND • Parking: Does not include substantially more parking than required[4], such that it discourages transit use by making it too convenient to drive; AND • Affordable Housing: Does not replace affordable residential units with a smaller number of moderate- or high-income residential units; AND • Active Transportation: Project does not negatively impact transit, bike or pedestrian infrastructure.
6. Affordable Residential Projects	• Affordability: Screening criteria only apply to the affordable units; AND • Parking: Does not include substantially more parking than required[4], such that it discourages transit use by making it too convenient to drive; AND • Transit Access: Project has access to transit within a ½ mile walking distance; AND • Active Transportation: Project does not negatively impact transit, bike or pedestrian infrastructure.

[1] See Appendix A for land use types considered to be retail.

[2] Defined in the Pub. Resources Code § 21064.3 ("Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods").

[3] Defined in the Pub. Resources Code § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours").

[4] Sacramento County Zoning Code Chapter 5: Development Standards

For projects that do not meet the screening criteria outlined in Table TC-1, then the following significant thresholds in Table TC-2 apply:

Table TC-2: CEQA VMT Thresholds for Development Projects

Project Type[1]	VMT Significance Criteria[2]	Threshold
Residential	Project VMT per capita exceeds 85 percent of the regional average VMT per capita	>15.0 VMT per capita
Office/Business Professional	Project VMT per employee exceeds 85 percent of the regional average VMT per	>13.9 VMT per employee
Industrial	Project VMT per employee exceeds the regional average VMT per employee	>16.4 VMT per employee
Regional Retail	Net increase in regional VMT	VMT increase
Regional Public Facilities/Services	Net increase in regional VMT	VMT increase
Redevelopment	Projects that result in a decrease to existing regional total VMT are presumed to have a less than significant VMT impact; otherwise, apply the relevant threshold based on the proposed land use (treating existing use as vacant)	Relevant threshold above
Mixed Use	Apply the relevant threshold to each land use component individually	Relevant threshold
Phased	Apply the relevant threshold to each phase independently	Relevant threshold
Land Development with Roadway Component	For locally-serving roadways, the significance determination is based on the land use component. For regional roadways, apply thresholds of significance for transportation projects.	Appropriate thresholds above or per Table 5-2

[1] Refer to Appendix A
[2] If not presumed to be less than significant per Table 3-1

The Guidelines still require the preparation of a Level of Service analysis, as this is important information for SacDOT and the community. However, the information and conclusions of the LOS analysis is not included in the CEQA impact analysis. This information can be found in the Transportation Analysis (Appendix TC-1).

BICYCLE AND PEDESTRIAN FACILITIES

Bicycle facilities include Class I (off-street facilities), Class II (on-street bicycle lanes identified with signage and markings), and Class III (on-street bicycle routes identified by signage). Pedestrian facilities are composed of paths, sidewalks, and pedestrian crossings. A bicycle or pedestrian impact is considered significant if the proposed Project would:

- Eliminate or adversely affect an existing bikeway or pedestrian facility in a way that would discourage its use;
- Interfere with the implementation of a planned bikeway as shown in the Bicycle Master Plan, or be in conflict with the Pedestrian Master Plan; or
- Result in unsafe conditions for bicyclists or pedestrians, including unsafe bicycle/ pedestrian, bicycle/ motor vehicle or pedestrian / motor vehicle conflict.

TRANSIT FACILITIES

Transit facilities include shuttle services, bus service, bus rapid transit (BRT), and light-rail facilities. A project is considered to have a significant impact on the public transit system if the project would generate ridership, which when added to existing or future ridership exceeds available or planned system capacity. An impact may also be significant if a project would conflict with or obstruct implementation of a transit plan.

METHODOLOGY

Travel Demand Models (TDMs) are broadly considered to be amongst the most accurate of available tools to assess VMT. The SACOG TDM (SACSIM) was determined to be the best fit for this project considering the geographic location of the project and the detailed roadway network in the model for the Sacramento region. The 2016 SACSIM[1] is used in the Transportation Study and the future year was grown from 2036 to 2040 to be consistent with the Master Plan Update.

To determine the VMT related to the Master Plan Update, the Traffic Analysis Zone (TAZ) representing the Airport was split to separate the employment from the passenger trips. This split facilitated the analysis of employment VMT and passenger VMT, as well as making it easier to complete other required analyses including select-zone analyses of the project to understand project distribution. The employment VMT was determined by using SACSIM output data and using a methodology consistent with other adopted methodologies in the region.

In order to determine potential impacts with respect to roadway hazards and circulation, this analysis includes evaluation of the following transportation facilities:

- 23 intersections within Sacramento County
- 15 roadway segments within Sacramento County
- I-5 (within the study area)

[1] The 2019 SACSIM model was not available when the analysis effort began, and it was determined to remain with the 2016 model.

- SR-99 (within the study area)

Based on the County's requirements, this Transportation Study was conducted for the study facilities for the following scenarios:

- Existing (2020) Conditions
- Existing (2020) plus Proposed Project (Master Plan Update) Conditions
- Existing (2020) plus Proposed Project (Cargo Facility) Conditions
- Existing (2020) plus Proposed Project (Master Plan Update and Cargo Facility) Conditions
- Cumulative Conditions
- Cumulative plus Proposed Project (Master Plan Update) Conditions
- Cumulative plus Proposed Project (Cargo Facility) Conditions
- Cumulative plus Proposed Project (Master Plan Update and Cargo Facility) Conditions

IMPACTS AND ANALYSIS

IMPACT: RESULT IN AN INCREASE IN VMT

MASTER PLAN UPDATE

The *SMF Catchment Area Analysis* prepared to guide development of the Master Plan Update, provides information on the existing unmet passenger demand. Specifically, the data shows that more than 2.1 million domestic and 1.6 million international passengers travel to airports outside of the Sacramento region. Primarily, these passengers use airports in the Bay Area. If SMF does not expand or provide additional passenger service, these longer vehicular trips to the Bay Area airports will continue or possibly expand with population growth over time. The provision of additional gates to serve this unmet local demand is the primary reason for the proposed Master Plan Update.

PROPOSED CARGO FACILITY

The proposed cargo facility will add new trips to the region due to the increase in employment. While the trips associated with the heavy-vehicle trucks can be included in the VMT analysis, the 2018 OPR guidance is specific to passenger-vehicle and light-duty trucks. It is generally understood that heavy-duty truck impacts are regulated through other aspects of California's regulatory and statutory framework. Further, due to the operational nature of cargo facilities, the end user generally chooses the best location to reduce costs, which include less mileage by heavy-duty trucks. Therefore, based on these reasons, and through consultation with County staff, the VMT assessment for the proposed cargo facility (an industrial land use) would be evaluated against the threshold of significance for work VMT per employee (commute trip to work) as compared to the SACOG regional average for the same metric.

CONCLUSION

The average VMT per employee for the SACOG Region is 12.58 vehicle miles, and the average VMT per employee for SMF and the cargo facility is 20.52 and 22.59 vehicle miles, respectively. Since the project would increase vehicle miles over the existing SACOG regional average, the impact is considered significant.

Table TC-3: VMT Calculations

Location	Total VMT	Total Home-based Work Trips	Average Home-based Work VMT per Employee
SACOG Region	12,366,389	983,193	12.58
Master Plan Update Employees	24,005	1,170	20.52
Cargo Facility Employees	37,899	1,678	22.59

In addition to calculating the VMT per employee, the passenger-related VMT was also calculated. The VMT was calculated for existing (2020) and Future (2040) conditions (Table TC-4). The number of daily passengers is expected to rise from 23,154 to 39,026 and associated total daily VMT is expected to rise from 942,366 vehicle miles to 1,594,123 vehicle miles. However, the per passenger VMT will incrementally rise from 40.70 vehicle miles to 40.85 vehicle miles.

Table TC-4: Passenger VMT

Time Period	Passengers	Total VMT	VMT per Passenger
Existing (2020)	23,154	942,366	40.70
Future (2040)	39,026	1,594,123	40.85

As noted above, the Master Plan Update is expected to recapture passengers that would have traveled to the Bay Area. The approximate VMT reduction per passenger is 64.2. When considering the total recaptured passengers (7,936), the result is a reduction of 509,500 vehicle miles over the no project alternative. Totaling the passenger and employee VMT associated with the Master Plan Update (excluding the proposed cargo facility), the expected VMT will be reduced 486,941 per day. Table TC-5 below portrays this information.

Table TC-5: Summary of VMT Analysis for the Master Plan Update

Metric	VMT/ VMT per Passenger/ VMT per Employee
Additional VMT per Passenger	0.15
Additional Passengers	15,872
VMT for Additional Passengers	2,339
Average Bay Area Airport VMT per Passenger	105.00
VMT Reduction for Recaptured Passengers	-64.20
Total VMT Reduction	-509,500
VMT per Employee Increase	10.01
Total Additional Employees	2,020
Total Additional Employee Related VMT	20,220
Net Change in VMT due to Proposed Airport Master Plan Update	-486,941

PAL 1 projects (largely the proposed cargo facility) would happen well before the recapture of passengers. Therefore, as noted above, the VMT associated with the proposed cargo facility would exceed the regional VMT for employees, thus resulting in a significant impact in the short-term. There are various programs aimed to reduce employee VMT. Transportation Demand Management options are the most appropriate and feasible mitigation to reduce VMT. Some Transportation Demand Management measures that could be considered are managed carpool service, emergency ride home, on-site transportation manager/coordinator and marketing materials, and safe, well-lit pedestrian/bicycle facilities. Another program to be considered is establishing or joining a Transportation Management Association (TMA). One consideration may be the Metro Air Park, which has an established TMA in proximity to the proposed cargo facility. Regardless, the TMA would be funded by a non-revocable funding mechanism such as a Community Facilities District or a County Service Area. Recent studies have shown that these programs, on average, have a participation rate of seven percent. Therefore a reduction of 2,243 VMT may be realized; however, this is not enough to reduce the average VMT per employee below the level of significance (SACOG regional average).

Mitigation consistent with the above is recommended to reduce employee VMT impacts associated with the proposed cargo facility. However, even with implementation of recommended mitigation measures, impacts associated with employee VMT remain ***significant and unavoidable***.

Mitigation Measures

TC-1 The following measures shall be implemented by the Cargo Facility proponent to reduce employee VMT:

Prior to issuance of occupancy permits, project operator(s) shall <u>**participate in the Airport-wide**</u> ~~prepare and submit to the Environmental Coordinator, a~~ Transportation Demand Management (TDM) program <u>**(as outlined in mitigation measure AQ-6)**</u> <u>**which**</u> detail~~ing~~<u>**s**</u> strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips by walking, bicycle, carpool, and transit. ~~The TDM program shall include, but is not limited to, the following:~~

~~a. Provide transportation information center and on-site TDM coordinator/program manager to educate employers, employees, and visitors of surrounding transportation options;~~

~~b. Promote bicycling and walking through design features, such as showers for employees, self-service bicycle repair area, etc. around the project site;~~

~~c. Promote and support carpool/vanpool/rideshare use through parking incentives and administrative support, such as ride-matching service; and~~

~~d. Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated parking spaces for carpool/vanpool users.~~

~~TC-2 Prior to issuance of Occupancy permits, the Cargo Facility proponent shall establish a new, or join and maintain membership in an existing Transportation Management Association.~~

Impact: Conflict With A Program Plan Or Policy Addressing The Circulation System Including Transit, Roadway, Bicycle And Pedestrian Facilities

The location of SMF and limited nearby urban development is intentional to prevent land use incompatibilities. By design, traveling to SMF is primarily by passenger vehicles; however, there are two bus routes that serve SMF on a 20-30 minute headway. In addition, an extension of Regional Transit Light Rail Train (Green Line) is proposed to serve SMF in the future. The proposed Master Plan Update continues to show the Light Rail Extension and provides right of way in PAL 4. Additionally, internal to airport operations is an on-site shuttle system to carry passengers to various parking facilities and rental car services. The proposed project is consistent with local transit plans.

There are limited pedestrian and bicycle facilities within the airport. Where feasible and safe, new construction associated with Master Plan projects will be designed to incorporate pedestrian and bicycle facilities and link to the existing facilities in place. The proposed project is consistent with the Sacramento County Pedestrian Master Plan and Bicycle Master Plan.

The prior FEIR analyzed the overall circulation system with respect to Level of Service. The proposed project is consistent with the General Plan Transportation Diagram. The project will be required to comply with applicable access and circulation requirements of the County Improvement Standards and the Uniform Fire Code. The proposed project will not conflict with existing programs or policies addressing transit, pedestrian and bicycle facilities. Impacts are ***less than significant***.

MITIGATION MEASURES

None recommended.

IMPACT: SUBSTANTIALLY INCREASE ROADWAY HAZARDS

LOCAL ROADWAYS

Based on the collision data provided by the County, the collision rate on Elverta Road is nearly double that of the State average for similar facilities. While no crashes involved a fatality, there are measures that can be implemented to increase safety on this segment of Elverta Road. These generally involve improving roadway geometry, including paved shoulders, right- and left-turn lanes, and intersection signalization.

Elverta Road is two-lane roadway with narrow shoulders. The roadway is on the boundary of the Urban Services Boundary and meets the characteristics of a substandard rural roadway (less than 12-foot travels lanes and no or narrow shoulders). The increase of vehicles associated with the proposed cargo facility and cumulatively the Master Plan Update (PAL 1 through 3) will add to the volume of traffic on the roadway and increase potential safety concerns and traffic collisions. According to the Sacramento County Guidelines, an impact is assessed if a project increases the average daily traffic over 6,000 or contributes 600 or more to a roadway over 6,000 daily vehicles to a currently substandard rural roadway. The proposed project will increase the average daily traffic for Elverta Road (Earhart Drive to State Route 99) over 6,000 (existing plus project and cumulative conditions) (Table TC-6). Based on the impact analysis, the addition of the cargo facility would result in a significant impact under Existing Plus Project and Cumulative Plus Project conditions. Mitigation consisting of roadway improvements to increase travel lanes to 12 feet and to construct paved 6-foot shoulders, will reduce potential safety concerns along Elverta Road.

Table TC-6: Rural Roadway Functionality

ID	Roadway Segment	ADT					
		Existing	Existing Plus Cargo Facility	Existing Plus MPU (includes cargo facility)	Cumulative	Cumulative Plus Cargo Facility	Cumulative Plus MPU (includes cargo facility)
1	Elverta Road, Garden Highway to Earhart Drive	563	600	620	600	600	600
2	Elverta Road, Earhart Drive to Power Line Road	876	**6,860**	**6,940**	900	5,260	5,260
3	Elverta Road, Power Line Road to Metro Air Parkway	1,232	**6,620**	**6,620**	5,700	**9,270**	**9,270**
4	Elverta Road, Metro Air Parkway to Lone Tree Road	1,812	**7,200**	**7,200**	N/A due to General Plan widening improvements (4-lane arterial)		
5	Elverta Road, Lone Tree Road to SR-99	1,790	**6,890**	**6,890**	N/A due to General Plan widening improvements (4-lane arterial)		
6	Power Line Road, Elverta Road to Road A	539	1,140	1,220	3,000	3,780	3,780
7	Power Line Road, Road A to Road D	539	1,140	1,220	1,100	1,880	1,880
8	Power Line Road, Road D to Skyking Road	539	1,140	1,220	5,200	5,980	5,980

Bold indicates a project impact.
All roadways in the existing condition are 2-lanes, less than 36 feet in width and are considered substandard.

In addition to the roadway segment analysis, an intersection analysis completed for Elverta Road indicates that the existing plus project (cargo facility) scenario, will reduce the level of service on Elverta. In general, the existing stop control intersections will experience an increase in delay; however, delay alone is a not a CEQA impact. One of these intersections is Elverta Road and Earhart Drive and installation of a new traffic signal at this intersection is included in the project description. Safety impacts were not identified at study intersections.

FREEWAY/MAINLINE

A freeway deficiency analysis was completed for I-5 and State Route 99 for the existing, existing plus project and cumulative conditions. The analysis identified freeway segments that are deficient in the existing and cumulative condition. The addition of passengers and employees associated with Master Plan Update will add to existing deficiencies. Since this is a level of service deficiency, no impacts are identified under CEQA.

Caltrans conducted a safety analysis for I-5 mainline and determined that there are a high rate of collisions associated with Airport Boulevard interchange. In order to remediate this safety concern, Caltrans is installing ramp meters which should be operational in 2021. The addition of ramp metering will likely lead to extensive queues that may extend over the freeway affecting internal airport traffic operations. However, this would not be considered a new safety concern as traffic speeds are lower and drivers are preparing to make turning movements.

Deficiencies were noted in the Transportation Study for the Airport Boulevard northbound off-ramp (left-hand turn movement) during the existing AM and PM peak-hours, existing plus project and cumulative plus project conditions. Deficiencies were noted for the Airport Boulevard southbound off-ramp during the existing AM peak-hour condition, and PM peak-hour existing plus project and cumulative plus project. Suggested improvements to increase the level of service include signalizing the intersections or constructing a roundabout. Again, deficiencies associated with level of service are not included in the CEQA analysis, unless the deficiency would lead to a safety impact. In the existing plus project conditions, it is possible that the queue length for the southbound off-ramp could exceed the existing queue capacity. This would result in a potentially significant safety impact. Mitigation is recommended to install intersection improvements (signalization or roundabout) to reduce queue delay and thereby reduce queue length.

The Transportation Study did not identify other areas where the project may substantially increase roadway hazards. Implementation of the recommended mitigation measures will reduce impacts to ***less than significant***.

MITIGATION MEASURES

TC-2 Elverta Road Improvements (Earhart Road to Power Line Road)

Prior to issuance of occupancy permit for the Cargo Facility, install roadway improvements along this segment of Elverta Road to County standards of 12-foot vehicle lanes with 6-foot paved shoulders**, or to the satisfaction of the Sacramento County Department of Transportation**.

TC-3 Elverta Road Improvements (Power Line Road to State Route 99)

If required by the County of Sacramento Department of Transportation, prior to issuance of occupancy permit for the Cargo Facility, install roadway improvements along this segment of Elverta Road to County standards of 12-foot vehicle lanes with 6-foot paved shoulders**, or to the satisfaction of the Sacramento County Department of Transportation**.

OR

Pay fair share, as determined by the County of Sacramento Department of Transportation, for this segment of Elverta Road widening.

TC-4 The southbound Airport Boulevard off-ramp shall be monitored as each PAL is completed (PAL 1- ~~2024~~**7.3 million enplaned passengers**, PAL 2- ~~2028~~**8.2 million enplaned passengers**, PAL 3- ~~2032~~**9.2 million enplaned passengers**). If the queue length begins to impede the mainline, the Department of Airports shall install intersection improvements in consultation with Sacramento County Department of Transportation and Caltrans. Improvements could consist of signalization or roundabout, or other measures deemed appropriate by Sacramento County Department of Transportation and Caltrans.

IMPACT: RESULT IN INADEQUATE EMERGENCY ACCESS

The proposed project continues to identify a site within the landside development area for a City of Sacramento Fire Station. This is located west of Airport Boulevard, south of Crossfield Drive, and will serve the airport and surrounding areas. Additionally, there is an Aircraft Rescue Firefighting Facility located airside to provide support for aviation emergencies. No impacts have been identified to existing or proposed emergency access.

MITIGATION MEASURES

None recommended.

12 TRIBAL CULTURAL RESOURCES

INTRODUCTION

In 2014, CEQA was amended by Assembly Bill 52 (AB 52) to create a separate category of cultural resources, “tribal cultural resources.” Since the FEIR was certified in 2007, the tribal cultural resources analyses were not conducted in accordance with AB 52. Therefore, pursuant to AB 52, this Supplemental EIR will analyze tribal cultural resources and identify mitigation measures to avoid or minimize potentially significant impacts.

TRIBAL RESOURCES ENVIRONMENTAL SETTING

The Sacramento International Airport is located in the Natomas Basin of the Central Valley. Situated approximately two miles north of the confluence of the Sacramento and American Rivers, this area of the County historically flooded regularly. It was not until the early part of the 20th Century, that local Reclamation Districts were formed to create a network of canals and drainage ditches to control flood waters to allow broad scale agriculture in the basin.

Prior to Spanish and European settlement of the Central Valley, the area was populated by several Native American Tribes. While this area of the County regularly flooded and there were likely high spots that did not flood, it is generally understood that this area was used as hunting and gathering land, not permanent settlements.

ETHNOGRAPHIC CONTEXT

Ethnography is the written record of a culture. Archaeology can be combined with ethnography to identify groups more specifically. Ethnographic records (from missions and other documents) show that the groups that inhabited Sacramento County are the Nisenan, or Southern Maidu, and the Plains Miwok, a subgroup of the Eastern Miwok. The Plains Miwok traditional territory included the lower reaches of the Cosumnes and Mokelumne Rivers and extended west to the Sacramento River from Rio Vista north to Freeport (Levy 1978). Ethnographers generally agree that Nisenan territory included the drainages of the Bear, American, Yuba, and southern Feather Rivers and extended from the Sacramento River east to the crest of the Sierra Nevada (Beals 1933, Faye 1923, Gifford 1927, Kroeber 1925, Powers 1976, Wilson and Towne 1978). Thus, the proposed Project is located within the territory commonly attributed to the ethnographic Nisenan.

NISENAN

As shown, ethnographically, the project area is in the southwestern portion of the territory occupied by the Penutian-speaking Nisenan. As a language, Nisenan (meaning “from among us” or “of our side”) has three main dialects – Northern Hill, Southern Hill, and Valley Nisenan, with three or four subdialects (Kroeber 1976, Shipley 1978, Wilson and Towne, 1978). The Valley Nisenan lived along the Sacramento River, primarily in large villages with populations of several hundred each. Between there and the foothills, the grassy plains were largely unsettled, used mainly as a foraging ground by both valley and hill groups. Individual and extended families “owned” hunting and gathering grounds, and trespassing was discouraged (Kroeber 1976, Wilson and Towne 1978). Residence was generally patrilocal, but couples actually had a choice in the matter (Wilson and Towne 1978).

Politically, the Nisenan were divided into “triblets”, made up of a primary village and a series of outlying hamlets, presided over by a more-or-less hereditary chief (Kroeber 1976, Wilson and Towne 1978). Villages typically included family dwellings, acorn granaries, a sweathouse, and a dance house, owned by the chief. The chief had little authority to act on his own or her own, but with the support of the shaman and the elders, the word of the chief became virtually the law (Wilson and Towne 1978).

Subsistence activities centered on the gathering of acorns (tan bark oak and black oak were preferred), seeds, and other plant resources, the hunting of animals such as deer and rabbits, and fishing. Large predators, such as mountain lions and wildcats were hunted for their meat and skins, and bears were hunted ceremonially. Although acorns were the staple of the Nisenan diet, they also harvested roots like wild onion and “Indian potato”, which were eaten raw, steamed, baked, or dried and processed into flour cakes to be stored for winter use (Wilson and Towne 1978). Wild garlic was used as soap/shampoo, and wild carrots were used medicinally (Littlejohn 1928). Seeds from grasses were parched, steam dried, or ground and made into a mush. Berries were collected, as were other native fruits and nuts. Game was prepared by roasting, baking, or drying. In addition, salt was obtained from a spring near modern-day Rocklin (Wilson and Towne 1978).

Hunting of deer often took the form of communal drives, involving several villages, with killing done by the best marksmen from each village. Snares, deadfalls, and decoys were used as well. Fish were caught by a variety of methods including use of hooks, harpoons, nets, weirs, traps, poisoning, and by hand (Wilson and Towne 1978).

Trade was important with goods traveling from the coast and valleys up into the Sierra Nevada mountains and beyond to the east, and vice versa. Coastal items like shell beads, salmon, salt, and foothills pine nuts were traded for resources from the mountains and farther inland, such as bows and arrows, deer skins, and sugar pine nuts. In addition, obsidian was imported from the north (Wilson and Towne 1978).

The Spanish arrived on the central California coast in 1769 and by 1776 the Miwok territory bordering the Nisenan on the south had been explored by Jose Canizares. In 1808, Gabriel Moraga crossed Nisenan territory, and in 1813, a major battle was fought between the Miwok and the Spaniards near the mouth of the Cosumnes River. Though the Nisenan appear to have escaped being removed to missions by the Spanish, they were not spared the ravages of European diseases. In 1833, an epidemic – probably malaria – raged through the Sacramento valley, killing an estimated 75 percent of the native population. When John Sutter erected his fort at the future site of Sacramento in 1839, he had no problem getting the few Nisenan survivors to settle nearby. The discovery of gold in 1848 at Sutter's Mill, near the Nisenan village of Colluma (now Coloma) on the south fork of the American River, drew thousands of miners to the area, and led to widespread killing and the virtual destruction of traditional Nisenan culture. By the Great Depression, no Nisenan remained who could remember the days before the arrival of the Euro-Americans (Wilson and Towne 1978).

REGULATORY SETTING

FEDERAL

SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT, 1966

Federal regulations for cultural resources are governed primarily by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended). Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings. The ACHP's implementing regulations are the "Protection of Historic Properties" 36 Code of Federal Regulations (CFR) Part 800. The Federal agency first must determine whether it has an undertaking that is a type of activity that could affect historic properties. Historic properties are those that meet the criteria for or are listed in the National Register of Historic Places (NRHP).

STATE OF CALIFORNIA

DISCOVERY OF HUMAN REMAINS

California law protects Native American burials, skeletal remains and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains (Section 7050.5 of the Health and Safety Code and Public Resources Code 5097.9).

When human remains are discovered, the protocol to be followed is specified in California Health and Safety Code, which states:

> *In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to*

the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

State CEQA Guidelines Section 15064.5, subdivision (e), requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission (NAHC) must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the NAHC. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the State CEQA Guidelines also require that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. Pursuant to Section 15064.5, subdivision (f), these provisions should include "an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place."

Assembly Bill 52

On September 25, 2014, Governor Brown approved Assembly Bill 52, which requires CEQA lead agencies to begin consultation with California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. The bill specifies that a project with an effect that may cause substantial adverse change in the significance of a tribal cultural resource may have a significant effect of the environment. The bill became effective July 1, 2015 and in codified in PRC, §21080.3.1.

To help determine whether a project may have such an effect, the Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. That consultation must take place prior to the determination of whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project. (Pub. Resources Code, § 21080.3.1.)

AB 52 adds tribal cultural resources to the categories of cultural resources in CEQA, which had formerly been limited to historic, archaeological, and paleontological resources. "Tribal cultural resources" are defined as either:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

a. Included or determined to be eligible for inclusion in the California Register of Historical Resources (CRHR)
b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

LOCAL

SACRAMENTO COUNTY GENERAL PLAN

CO-155. Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archeological significance of the site merits excavation and recording procedure. On-site reinternment shall have priority. The project developer shall provide the burden of proof that off-site reinternment is the only feasible alternative. Reinternment shall be the responsibility of local tribal representatives.

CO-157. Monitor projects during construction to ensure crews follow proper reporting, safeguards, and procedures.

CO-159. Request a Native American Statement as part of the environmental review process on development projects with identified cultural resources.

DISCLOSURE OF CULTURAL RESOURCES INFORMATION

Public disclosure of site specific cultural resources information is expressly exempt from the California Public Records Act, Government Code Sections 6250-6270. Furthermore, information obtained during Native American consultation or through consultation with the local and state agencies, including the North Central Information Center (NCIC), should remain confidential and is exempt from public disclosure under Senate Bill 922. Additionally, Sacramento County staff has signed an “Agreement to Confidentiality” with the NCIC that states that site-specific information will not be distributed or released to the public or unauthorized individuals. An authorized individual is a professional archaeologist or historian that qualifies under the Secretary of Interior’s standards to view confidential cultural resources materials.

SIGNIFICANCE CRITERIA

In accordance with Appendix G of the State CEQA Guidelines, a project would be considered to have a significant effect if it would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section

21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with a cultural value to a California Native American tribe, that is:

> Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
>
> A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Under PRC Section 21084.3, public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. California Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources (21080.3.1(a)).

METHODOLOGY

The cultural resource studies prepared for the prior EIR covered the portions of the Master Plan facilities identified for Phase 1 and 2. No surveys were completed for areas where development was not anticipated in the 20 year planning horizon. The proposed project identifies new facilities and construction within the previously unsurveyed areas, namely the proposed cargo facility, and commercial development north and south of Elverta Road. Dudek Consultants were retained to prepare a cultural resources report for the northern area of the airport containing the proposed cargo facility; *Draft Cultural Resources Inventory Report for the Sacramento International Airport Cargo Facility Project, Sacramento County, California. October 2020*.

Information contained in the Dudek report pertaining to tribal cultural resources are presented in this chapter along with the information obtained through the Native American consultation process. Archival research and fieldwork were conducted to establish what tribal cultural resources may be present within the project area and, furthermore, may be impacted as a result of implementation of the proposed project.

When prehistoric or historic-era resources were encountered, they were documented on State of California Department of Parks and Recreation (DPR) Series 523 Primary, Archaeological Site, and other DPR forms as necessary. Each site, feature, or isolated artifact was photographed and mapped as a point, line, or polygon as appropriate on appropriate USGS topographic quadrangle maps. Previously recorded resources within the project site were revisited and their current condition was assessed.

NCIC Records Search

Dudek requested a records search from the North Central Information Center (NCIC) of the California Historical Resources Information System (CSU-Sacramento) for the project site on March 11, 2020. The record search at the NCIC indicated that 44 cultural surveys were conducted within the half-mile search radius of the project site; 24 of which included portions of the current project area. There are two previously recorded or listed cultural resource districts within the project area and 21 other cultural resources within a half-mile of the project area. The two previously recorded cultural districts located within the project area are the: Sacramento River Tribal Cultural Landscape (TCL) (P-34-005225) and RD 1000 (P-34-005251).

Field Survey

Dudek staff archaeologists conducted archeological field surveys of the study area. A reconnaissance-level survey was conducted for all areas that were not restricted. Pedestrian transects every 15 meters were completed. During the transects, the ground surface was carefully inspected for evidence of historical use such as fragments of ceramics, metal, and glass, and for indications of prehistoric use such as chipped stone artifacts and debitage, ground stone artifacts, bone fragments, and soil color changes. Exposures of subsurface soil were carefully examined. The ground surface visibility was overall low due to vegetation and paved surfaces at the time of survey. Therefore, special attention was paid to areas of erosion, mechanical cuts, drainage ditches or animal burrows; however, no cultural materials were observed on the ground surface for the areas surveyed. No new resources were discovered during the pedestrian survey.

Native American Consultations

Pursuant to AB-52, on September 11, 2020, County staff mailed notification letters to the tribes that have formally requested notification. Further, all tribes were sent a copy of the Notice of Preparation for this document in August 2020. Written responses were received during the AB-52 30-day review period from the United Auburn Indian Community (UAIC) and Wilton Rancheria. Both Tribes requested copies of the cultural reports prepared for the project (provided on November 2020). Initial comments received by UAIC noted that there are tribal cultural resources along the boundary of the project, but it was unclear if they would be impacted by the project. After further review of the information, UAIC provided mitigation language focusing on monitoring future ground disturbance and appropriate treatment of tribal cultural resources if discovered. Wilton Rancheria, in addition to requesting the cultural reports, provided similar mitigation language. All tribes have requested to be notified if there are changes to the project description and to be included in all future CEQA noticing.

Even though not a requirement of CEQA, in April 2020, the Native American Heritage Commission responded to the consultant's request for a sacred lands file search and list of Native American contacts pursuant to Section 106 of federal law. The file search was negative and no Native American cultural resources were identified by commission staff in the immediate project area. Commission staff recommended contacting other sources for information on known and documented sites, including a list of Native American contacts.

IMPACTS AND ANALYSIS

IMPACT: CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE ON-SITE

As indicated the in NCIC records request, there is one cultural resource district within a portion of the project study area. This resource district is associated with Native American culture and is detailed below.

P-34-005225

The Sacramento River TCL, roughly encompassing the Lower Sacramento River area, is defined by the distribution of important natural resources across the landscape including waterways, tule habitat, fisheries, and other wildlife that were important for the lifeways of local indigenous groups. The TCL is identified as culturally significant by several groups for its association with the cultural practices and beliefs, the maintenance of continuing cultural identity, and its association with traditional stories. The area also contributes significantly to broader patterns of prehistory, with numerous prehistoric sites present within its boundaries. All of the previously recorded prehistoric resources located within a half-mile of the APE are situated along the banks of the Sacramento River, highlighting the importance of the river for indigenous lifeways. Thus, while no identified archaeological sites are known within SMF, the proximity of the Project to the Sacramento River and its location within the Sacramento River TCL suggest that the APE and the surrounding area were used by prehistoric peoples.

As noted above in the AB52 consultation process, two Tribes –United Auburn Indian Communities (UAIC) and Wilton Rancheria responded with requests for consultation. Neither Tribe has identified a known sacred site or tribal cultural resource within the project boundaries; however, due to known tribal cultural resources nearby, there is always the possibility of uncovering buried resources when ground disturbance is proposed. Both Tribes provided recommended mitigation measures including requesting the opportunity to conduct construction monitoring and worker awareness training. Mitigation is included to support this request. Impacts to tribal cultural resources are ***less than significant***.

MITIGATION MEASURES:

Implement Mitigation Measure CR-1 and CR-2.

13 SUMMARY OF IMPACTS AND THEIR DISPOSITION

POTENTIALLY SIGNIFICANT EFFECT WHICH CANNOT BE AVOIDED EVEN WITH IMPLEMENTATION OF MITIGATION MEASURES

AIR QUALITY

The project involves the operation of new Master Plan elements that were not previously analyzed in the prior EIR. These projects consist of the proposed cargo facility, new concourse, new consolidated rental car facility, and 330 acres of commercial development. The eventual operation of all Master Plan elements will result in significant emissions for ozone precursors - NO_x and ROG. Mitigation is recommended and will reduce operational impacts, but not to a less than significant level.

BIOLOGICAL RESOURCES

The area north of Elverta Road contains riparian and oak woodland habitat. Construction of road improvements to Elverta Road and identified commercial development areas may require the removal of native trees. Mitigation is recommended consistent with County policies and ordinances to compensate for the loss of habitat. However, since project specific information is not known at this time, impacts remain potentially significant.

CLIMATE CHANGE

The project involves the construction and operation of new Master Plan elements which will introduce new greenhouse gas emissions above the baseline condition. The project will be required to comply with Sacramento Metropolitan Air Quality District Emissions Best Management Practices Tier 1 (no natural gas and electric vehicle read spaces). Even with implementation of these measures, the project will exceed significance thresholds of 1,100 $MTCO_2e$ per year as established by the County for operational emissions. The project will result in 5,827 $MTCO_2e$ per year. Mitigation measures are recommended to reduce impacts; however, emissions cannot be reduced to a less than significant level and remain significant and unavoidable.

LAND USE

There are 135 acres of Farmland of Local Importance to be developed with commercial uses in Planning Activity Level 3 (2033-2038). Pursuant to General Plan Policy AG-5, the loss of over 50 acres of Prime, Important, or Local Importance within the Urban Service Boundary is significant. The preservation of farmland elsewhere does not constitute suitable mitigation, and therefore impacts remain significant and unavoidable.

TRANSPORTATION AND CIRCULATION

The average VMT per employee for the SACOG Region is 12.58 vehicle miles, and the average VMT per employee for SMF and the cargo facility is 20.52 and 22.59 vehicle miles, respectively. Since the project would increase vehicle miles over the existing SACOG regional average the impact is considered significant. Recommended mitigation will reduce employee VMT, but not to a level of less than significant and remain significant and unavoidable.

POTENTIALLY SIGNIFICANT EFFECTS WHICH COULD BE AVOIDED WITH IMPLEMENTATION OF MITIGATION MEASURES

AIR QUALITY

The proposed project will increase criteria pollutants during construction. Construction activities require the use of various combinations and types of construction equipment. Much of this equipment is likely to be diesel-fueled and would emit NO_X and particulate matter as part of the fuel combustion process. In addition, the disturbance of paved surfaces and soils produces fugitive dust. Since construction of multiple Master Plan elements may occur at the same time, mitigation is recommended to reduce construction related emissions to a less than significant level.

BIOLOGICAL RESOURCES

The project site contains several different types of habitat including valley grasslands, agricultural fields, and riparian oak woodlands. The project includes development of the Airport Operations Areas and the area north of Elverta Road, which contains these habitats and provides suitable habitat for several endangered, threatened or special status species.

The project may directly impact up to 9.39 acres of wetlands and/or waters of the U.S. including agricultural and roadside ditches, and seasonal wetlands. The aquatic habitat is suitable habitat for giant garter snakes. Along with aquatic resources, riparian oak woodlands will be removed north of Elverta Road. This habitat contains mature trees which are suitable habitat for nesting raptors and other migratory bird species.

Potentially significant impacts to habitat and special status species can be reduced to less than significant levels through implementation of recommended mitigation measures. Mitigation measures consist of pre-construction surveys for special status species, obtaining federal and State agency permits, and in-kind compensation for loss of foraging habitat.

CLIMATE CHANGE

The proposed project will increase GHG emissions during construction. Similar to air quality impacts, construction activities require the use of various combinations and types of construction equipment. Much of this equipment is uses combustion engines (not electric) and will emit GHG emissions. Construction of PAL 1 Master Plan elements and PAL 2 and 3 Master Plan elements will generate GHG emissions exceeding the County GHG thresholds for construction, 1,100 MT CO_2e. Pursuant to SMAQMD guidance, construction emissions can be amortized over the life the project. Following this guidance, project construction GHG emissions would not exceed thresholds and therefore would be less than significant.

CULTURAL RESOURCES

The project contains one recorded historical resources within the study area, and several more archeological resources within a one-quarter mile vicinity. The proposed project would not disturb these resources. However, there remains a potential to encounter buried or as yet undiscovered historical resources, archaeological resources, tribal cultural resources, or human remains during land clearing and construction work. Mitigation is included to ensure that such resources are treated appropriately if discovered.

TRIBAL CULTURAL RESOURCES

No tribal cultural resources were identified within the project study area; however, there are known tribal cultural resources within one-quarter mile of the project site. Due to the proximity of the known tribal resources, mitigation measures were recommended through consultation with local tribes to ensure proper treatment of tribal resources if discovered.

TRANSPORTATION AND CIRCULATION

The project will increase traffic on local roadways and freeways. Roadway safety hazards were identified along Elverta Road from Earhart Road to State Route 99. This is a substandard rural roadway where recommended mitigation to widen travel lanes and construct paved should will reduce this safety hazard. Other roadway safety hazards were identified for the southbound I-5/Airport Boulevard off-ramp. In the cumulative conditions, traffic may result in queuing extending onto the freeway. Mitigation is recommended to reduce this impact to less than significant levels.

EFFECTS FOUND NOT TO BE SIGNIFICANT

Impacts associated with aesthetics, air quality (conformity determination, mobile source CO emissions, substantial pollutant concentrations, and odors), hydrology and water quality, noise, population and housing, public services and utilities, transportation and circulation (circulation patterns, pedestrian, bicycle and transit facilities) are considered less than significant.

Irreversible Environmental Changes

CEQA Guidelines Section 15126.2 requires the evaluation of significant irreversible environmental changes, stating, “uses of nonrenewable resources during the initial and continued phases of a proposed project may be irreversible since a large commitment of these resources makes removal or nonuse thereafter unlikely.” This section of the EIR evaluates whether the project would result in the irretrievable commitment of resources, or would cause irreversible changes in the environment.

Construction of various project elements will require irretrievable commitments of a variety of finite resources, including aggregate, petrochemicals, and metals. These commitments will occur both as direct and indirect impacts of the project. Direct impacts include the consumption of fuel by the construction fleet and equipment, the consumption of fuel as part of the vehicle and equipment usage during project operation, and the use of metals and aggregates in the construction of the buildings. Indirect impacts include the consumption of fuel and other resources to produce the materials used in construction.

Growth Inducement

The CEQA Guidelines identify several ways in which a project could have growth-inducing impacts (CEQA Guidelines Section 15126.2(d)). Growth inducement is when a project fosters economic or population growth, either directly or indirectly, in the surrounding environment. For instance, a project may generate significant additional employment opportunities, which in turn generates the construction of additional housing to bring additional residents near this employment center. Indirect growth inducement is also possible, if a project removes obstacles to population growth, or encourages and facilitates other activities that are beyond those proposed as part of the project, for example, altering the availability of developable land and precedent-setting actions related to local government growth policies.

Growth inducement may not be considered necessarily detrimental, beneficial, or of significance under CEQA. Induced growth is considered a significant impact only if it directly or indirectly affects the ability of agencies to provide needed public services or if it can be demonstrated that the potential growth, in some other way, significantly affects the environment. The paragraphs below analyze the project’s potential to induce growth by removing a barrier to growth, by setting a land use precedent, or by fostering additional development.

Removing Barriers to Growth

The project includes extension of public infrastructure (water or sewer lines) within airport property to serve the new facilities. Electrical service is available in the immediate project vicinity. The project will not cause substantial growth inducement around the site; the project is consistent with the surrounding urban growth.

Land Use Precedent and Fostering Development

The project is a Master Plan Update of a public airport facility. The airport has been in operation since 1967 in the Natomas community and has grown over the decades as demand for air travel has increased. Additional procurement of land is not necessary. The project will not set a land use precedent as the airport is existing and there is no need for additional land under the Master Plan Update proposal. Approval of the Master Plan Update will accommodate the project growth at the airport over the next 20 years and is not precedent-setting.

Cumulative Impacts and Analysis

The CEQA Guidelines section 15355 defines a cumulative impact as “two or more individual effects which, when considered together, are considerable”. An individual effect need not itself be significant to result in significant cumulative effects; the impact is the result of the incremental effects of the Project combined with the effects of “other closely related past, present, and reasonably foreseeable probable future projects.” CEQA does not define “closely related”, but the Code of Federal Regulations (40 CFR 1508.25) indicates that a “closely related” project is one which is automatically triggered by the Project; one which cannot proceed without the Project first proceeding (mutual dependency); one which requires the Project for justification or is an interdependent part of the same action; or one which is a similar action with common timing, geography, and other features.

The requirements for a cumulative analysis are described in CEQA Guidelines Section 15130. A cumulative analysis “need not provide as great detail as is provided for the effects attributable to the project alone.” The analysis should focus on analyzing the effects of the project to which other projects contribute, to the extent practical and reasonable. These other projects may be identified either through the provision of a list of cumulative projects, or via a summary of projections contained in an adopted General Plan or an adopted EIR. This EIR uses a combination of the two methods, using projections contained in adopted General Plans and related planning documents, as well as known major reasonably foreseeable other projects.

The significance criteria used for analysis are the same as those used throughout the topical chapters of the EIR. Section 15130(a)(3) states that a Project’s contribution to an impact is “less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures”.

The cumulative setting is based upon the development forecasts of the adopted Sacramento Area Council of Governments’ 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) development forecast. The MTP/SCS included development projections for Sacramento County, and its incorporated cities, as well as for adjacent counties and cities, based on adopted and in-development General Plans, Specific Plans, and Community Plans in each jurisdiction.

In addition to the MTP/SCS, proposed project within Sacramento County in the surrounding region. These are provided in the list below.

Project Number	Project Name	Location	Description	Status
Unincorporated Sacramento County				
1	SMF Master Plan	SMF	Airport Master Plan through 2020	Approved 2007
2	Metro Air Park SPA	Immediately east of SMF	A 1,89-acre commercial/industrial development to support the airport and surrounding community	Approved 1997 Amended 2019
3	Grandpark Specific Plan	East of SMF, east side of Elkhorn Blvd. and Highway 99	A 5,675-acre plan area that will include: residential, commercial, institutional, public and open space.	In planning process NOP released 2017
4	Upper Westside Specific Plan	South of SMF, north of I-80, between the City of Sacramento and the Sacramento River	A 2,066-acre plan area that will include: residential, commercial, public and open space.	In planning process NOP released 2020
City of Sacramento				
5	Greenbriar Mixed Use Project	Approximately one mile east of SMF, north of I-5, west of Highway 99	A land development project including: residential, commercial, school and parks.	Approved 2017
Sutter County				
6	Sutter Point	Approximately one mile north of SMF immediately adjacent to the County line	A 7,528-acre plan area that will include: residential, commercial, schools, public and open space.	Approved 2009 Amended 2014

AIR QUALITY

Project construction and operation will result in the generation of ozone precursors and particulate matter. Ozone precursors generated by construction and operation are above thresholds. This project, together with all cumulative projects, are subject to the same Sac Metro Air District SMAQMD rules and thresholds related to construction ozone precursors, and if necessary are required to off-set emissions. On a cumulative level, existing compliance with adopted rules and regulations will be sufficient to offset construction-related ozone precursor emissions. The project will not contribute to a cumulatively significant impact for short-term emissions.

The long-term emissions associated with operation of Master Plan elements will exceed thresholds. Cumulative projects that exceed SMAQMD thresholds for operational emissions, must prepare air quality reduction plans. Even with implementation of air quality reduction plans, the daily emission thresholds will be exceeded. The project will contribute to a cumulatively significant impact for long-term emissions.

Climate Change

The proposed project currently generates and will continue to generate greenhouse gas (GHG) emissions that would contribute to climate change. The airport has been in operation since 1967, and the emissions from this current operation and adopted Master Plan elements constitute the baseline condition for this analysis. However, the proposed changes to the Master Plan when added to the baseline contributes significantly to the County's GHG emission inventory.

The Master Plan Update includes new projects which will generate GHG emissions to construct and operate and in doing so, can capture more passengers that would have traveled to the Bay Area for flights. The overall reduction in vehicle miles traveled by passengers would reduce cumulative mobile emissions. Even after applying the reduction in mobile emissions, the proposed Master Plan Update will result in 5,827 MT CO2e per year. The project would result in significant and unavoidable impacts related to GHG emissions and GHG plan consistency. Therefore, the project's cumulative contribution to GHG impacts would be cumulatively considerable.

Cultural Resources

Cumulative development in Sacramento County could significantly impact historic, archaeological, paleontological, geologic, or human resources. The archeology of prehistoric resources in their original contexts is crucial in developing an understanding of the social, economic, and technological character of the resources. The boundaries of an archeologically important site could extend beyond property boundaries. As a result, a meaningful approach to preserving and managing cultural research should focus on the likely distribution of cultural resources, rather than on project or parcel boundaries. The cultural system is represented archeologically by the total inventory of all sites and other cultural remains. However, proper planning and appropriate mitigation can help to capture and preserve knowledge of such resources and can provide opportunities for increasing understanding of the past environmental conditions and cultures by recoding data about any sites discovered and preserving artifacts found. Based on the finding of the records and literature search and field survey, mitigation has been proposed that attempts to document and preserve cultural resources that have been identified or may be encountered during construction of this project as well as other cumulative projects. This mitigation limits the cumulative contribution of impacts to cultural resources within the County to less than significant.

Hydrology and Water Quality

The project will adequately mitigate hydrology and water quality impacts. The project will not impede the completion of planned regional flood control systems. Compliance with existing County ordinances and water quality permits ensures that the project will not contribute to a cumulative impact to downstream hydrology or water quality.

Land Use

The proposed Master Plan Update guides the development within the airport based on passenger enplanements trends. All development is within existing airport property and does not affect the Airport Land Use Community Plan which guides land use development surrounding the airport. The proposed project would not be cumulatively considerable. The proposed removal of 135 acres of Farmland of Local Importance north of Elverta Road will add to the loss of farmland within the Natomas Basin, but not to a level that is cumulatively considerable.

Public Services

The proposed project updates and modifies the previous Master Plan. The Airport has been in operation since 1967, and public services have increased over the years as the Airport has expanded. The proposed project will increase the need to public services, but not beyond the capability of the service providers and would not contribute to a cumulative considerable impact.

Transportation

The proposed project is consistent with the Sacramento County General Plan Transportation Plan and policies, and therefore will not result in a cumulatively considerable impact.

Tribal Cultural Resources

Cumulative development in Sacramento County could significantly impact tribal cultural resources. The archeology of prehistoric resources in their original contexts is crucial in developing an understanding of the social, economic, and technological character of the resources. The boundaries of tribal resources could extend beyond property boundaries. As a result, a meaningful approach to preserving and managing tribal resources should focus on the likely distribution of tribal resources, rather than on project or parcel boundaries. The cultural system is represented archeologically by the total inventory of all sites and other cultural remains. However, proper planning and appropriate mitigation can help to capture and preserve knowledge of such resources and can provide opportunities for increasing understanding of the past environmental conditions and cultures by recoding data about any sites discovered and preserving artifacts found. Based on the finding of the records and literature search and field survey, mitigation has been proposed that attempts to document and preserve tribal cultural resources that have been identified or may be encountered during construction of this project as well as other cumulative projects. This mitigation limits the cumulative contribution of impacts to cultural resources within the County to less than significant.

14 RESPONSE TO COMMENTS

The Draft Supplemental Environmental Impact Report (DSEIR) for the Sacramento International Airport (SMF) Master Plan Update was released on May 14, 2021 for a 45-day public review period that concluded on June 28, 2021. Six individual letters were received during the 45-day public review comment period. The letters have been separated into two categories – Agency Comments and Resident/General Public Comments. Each letter has been assigned a number, as indicated below, based on the category and date they were received.

For ease of review, individual comments addressing separate subjects within each letter are labeled based on the letter's numeric designation and comment number (e.g., the first comment in the first letter is Comment 1-1). The text of the comments has been provided, followed by a response. Note that the preface language of the letters is often excluded (where the text consists of salutations and brief descriptions of the commenting organization). Comment letters are included in their entirety in Appendix RTC-1.

Some of the written comments offer suggestions, general complaints about living near an airport, or express preferences related to the proposed development and do not address environmental issues or the adequacy of the DSEIR. All comment letters will be forwarded to the Board of Supervisors for consideration via this Final SEIR. In conformance with Section 15088(a) of the State CEQA Guidelines, written responses were prepared addressing comments on environmental issues raised in comments on the DSEIR.

Opportunity for additional public comment on the DSEIR was offered at the Sacramento County Planning Commission meeting on August 2, 2021. The purpose of the Planning Commission meeting was to allow for oral public comments on the DSEIR, for the Planning Commission to formally close the public comment period on the DSEIR, and to direct staff to respond to comments and prepare a Final SEIR. Two written comments were received on the environmental analysis or conclusions of the DSEIR at the meeting. After the Planning Commission meeting, one additional written comment was submitted and the Sacramento Metropolitan Air Quality Management District provided an addendum comment letter (Letter 7). Per Section 15207 of the CEQA Guidelines, the Lead Agency need not respond to late comments; however, the Lead Agency may choose to respond to late comments. The following Response to Comments provides a response to all comments received, to date, on the DSEIR irrespective of when they were received.

LIST OF AGENCY WRITTEN COMMENT LETTERS

1. Sacramento Area Sewer District/Sacramento County Regional Sanitation District, May 26, 2021
2. United Auburn Indian Community, June 1, 2021
3. Sacramento Regional Transit, June 16, 2021

4. California Department of Transportation, June 28, 2021
5. Sacramento Metropolitan Air Quality Management District, June 28, 2021
6. City Of Sacramento Community Development Department, August 3, 2021
7. Sacramento Metropolitan Air Quality Management District, September 24, 2021

LIST OF RESIDENT/GENERAL PUBLIC WRITTEN COMMENT LETTERS

8. Ellery Kuhn, Resident/General Public, May 24, 2021
9. Michael McKenna, Resident/General Public, July 30, 2021
10. Ellery Kuhn, Resident/General Public, July 31, 2021

Letter 1

Robb Armstrong, Development Services and Plan Check, Sacramento Area Sewer District/Sacramento County Regional Sanitation District, written comment; dated May 26, 2021.

Comment 1-1

In order to receive sewer service, the project proponent must complete a Sewer Master Plan that includes connection points and phasing information to assess the capacity of the existing sewer system to accommodate the additional flows generated by this project.

Response 1-1

SMF is currently connected to the Sacramento Regional Sewer District (Regional San) and Sacramento Area Sewer District (SASD) infrastructure. As detailed in the Public Services and Utilities Chapter, the on-site sewer connection can accommodate flows up to 1.4 million gallons per day. The DSEIR provides the projected sewer outflow for the predicted daily airport operations (passengers, employees, aircraft maintenance and operations) up to the year 2038, which is estimated at 0.34 million gallons per day. New projects under this Master Plan Update, which are not directly related to daily airport operations include the cargo facility and commercial uses north of I-5 and north of Elverta Road. Using the equivalent sewer demand (ESD) factor for commercial land uses (6x total acreage) and multiplying it by the domestic flow factor for each ESD (310 gallons per day)[1], the total additional sewer outflow from the Master Plan Update projects is 0.615 million gallons per day. Combined with the daily airport operations flow, there is adequate capacity to support new development associated with the Master Plan Update under the existing discharge agreement (service by contract). The supporting analysis provided here has been included in the Public Services and Utilities Chapter.

There is adequate capacity in the local and regional interceptors to serve the project. However, if the metered flow exceeds the existing discharge agreement, the agreement can be amended with the concurrence of both parties (SASD and SCDA). If an amendment is pursued, a sewer study and capacity analysis will be required.

The Sacramento County Department of Airports (SCDA) does not plan to change the existing sewer agreement (service by contract) into a permanent connection. However, it is understood that if SCDA would like a permanent connection or if the existing contract is amended, a sewer master plan along with phasing and facilities capacity plan will be required.

Comment 1-2

[1] Sacramento Area Sewer District System Capacity Plan Update 2020, December 2020.

Customers receiving service from Regional San and SASD are responsible for rates and fees outlines within the latest Regional San and SASD ordinances. Fees for connecting to the sewer system recover the capital investment of sewer and treatment facilities that serves new customers. The SASD ordinance is located on the SASD website at www.sacsewer.com/ordinances.html and the Regional San ordinance is located on the Regional San website at www.regionalsan.com/ordinance.

Response 1-2

Comment noted and forwarded to the SCDA. Additionally, this comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

LETTER 2

Anna Starkey, Cultural Regulatory Specialist, United Auburn Indian Community, written correspondence; dated June 1, 2021.

Comment 2-1

Thank you for the notification and opportunity to review the DSEIR for the above referenced project. UAIC has no specific comments on the document, but did want to say that we appreciate including tribal values in the mitigation measures for tribal cultural resources.

Response 2-1

Comment noted. Additionally, this comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

LETTER 3

Kevin Schroder, Senior Planner, Sacramento Regional Transit District (SacRT), written correspondence; dated June 16, 2021.

Comment 3-1

The Sacramento Regional Transit District (SacRT) appreciates the acknowledgement of current and future transit opportunities to SMF. The proposed Master Plan Update continues to show the Light Rail Extension and provides right of way in PAL 4. SacRT requests to be contacted if any development has a potential impact to the reserved Light Rail Extension right of way.

Response 3-1

Comment noted and forwarded to the SCDA. Additionally, this comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

LETTER 4

Alex Padilla, Branch Chief, Transportation Planning-South Planning, Local Assistance, and Sustainability, California Department of Transportation, written correspondence; dated June 28, 2021.

Comment 4-1

On page 1-6 of the Project Description, the last bullet shows the cargo facility will increase from 226,000 sqft to 950,000 sqft, but the number of employees from the cargo and airport improvements still remain at 2,020. Is there a reason why?

Response 4-1

The prior EIR did not specify a number of employees associated with the Phase 2 cargo facility either in the project description or in the technical studies that supported the individual chapter analyses. For the transportation and air quality analyses presented in this SEIR, the following assumptions were used in the modeling to identify potential impacts associated with new or modified projects in the Master Plan Update:

- New cargo facility identified in PAL 1 will employ approximately 3,315 employees that will be split over three daily shifts; and,
- Forecasted enplanement (passenger) growth and addition of employees to support passenger growth, approximately 2,020 employees.

This comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Comment 4-2

On page 11-8, what year was used for cumulative conditions analysis?

Response 4-2

For vehicle miles traveled (VMT), the cumulative condition year is set at 2040 to reflect the 20-year planning horizon of the Master Plan Update. There is no specified "year" associated with the cumulative condition for the Local Transportation Analysis (LTA). The of completion, and the area outside of Metro Air Park is representative of 2035 conditions, which is the maximum year allowed by the SACSIM15 model.

This comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Comment 4-3

On Page 11-9, when is the cargo facility expected to be completed?

Response 4-3

The cargo facility is expected to be completed within two construction seasons from the time of project approval. The analysis used an operational year of 2022.

Comment 4-4

Page 11-11 TC-1 Mitigation Measure TDM mitigation measure suggest promoting bicycling/pedestrian mode by adding incentives for carpooling and alternate travel modes. Did the current analysis find out how many people bike and walk to work at the airports and the number of employees that carpool? How does Sacramento County plan to address and mitigate the lack of active transportation and complete streets connecting to the Airport? And does the applicant plan to have a TDM monitoring strategy to see if the suggested measures are indeed helping in reducing VMT?

Response 4-4

The analysis does not include the current number of employees that may use alternate modes. The most viable alternate mode of transportation is public transit. There are two bus lines, which currently serve the airport and the project dedicates land for Regional Transit's proposed Green-Line Light Rail Extension. Active transportation infrastructure, including sidewalks and bike lanes, will be considered internal to the airport, where feasible, and would not introduce a new safety impact. Outside of the Airport Operation Area, it is anticipated that as development proceeds in the North Natomas community roadways will be improved with bicycle and pedestrian facilities. With development and associated infrastructure in the project vicinity, alternate forms of transportation become more viable and the Airport may see an increase in employees utilizing these forms of transportation.

Recommended Mitigation Measure AQ-6, Transportation Demand Management program, has been revised to include an annual monitoring implementation component.

Comment 4-5

Right of way/hydraulics Caltrans requests the drainage calculation verifying that there is no additional flow (Q) of water going into Caltrans's existing drainage system for the 100-year storm event.

Response 4-5

Comment noted and forwarded to the SCDA. Prior to ground disturbance associated with individual Master Plan Projects or elements that may affect Caltran's drainage systems, calculations will be completed and shared with Caltrans. SMF has an existing Industrial General Permit and an existing stormwater drainage system. Airports has indicated that all new Master Plan projects will be designed and directed towards existing stormwater infrastructure within the Airport. As indicated, in the unlikely scenario that Airport drainage will need to tie into Caltrans facilities, appropriate coordination will occur. It is understood that the SCDA would need to meet the requirements of Caltrans' MS4 permit including detention and treatment of stormwater runoff prior to discharge.

Comment 4-6

Right of way/hydraulics Caltrans requests the spread and depth calculations for the curb and gutter to be constructed with respect to the 10-year design storm (see HDM 831.3).

Response 4-6

Comment noted and forwarded to the SCDA. No construction is immediately planned for areas within Caltrans right-of-way. Additionally, this comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Comment 4-7

Right of way/hydraulics Caltrans requests the 2018 version of the Caltrans Standard Plans for Curb & Driveways. And all work proposed and performed within the State's highway right of way must be in accordance with Caltrans's standards and require a Caltrans Encroachment Permit prior to commencing construction.

Response 4-7

Comment noted. See Response 4-6.

Comment 4-8

Right of way/hydraulics Caltrans requests the applicant identify our right of way along with the distance to centerline, please have them contact D3rwmaprequest@dot.ca.gov for any right of way map request/information needs.

Response 4-8

Comment noted. See Response 4-6.

Comment 4-9

Traffic and Operations/Traffic Safety Caltrans is concerned about the new safety impact from the new commercial development and parking lot located south of I-5. There are limited amount of vehicles coming from this area and the addition of this new commercial development could create significant impacts to the already underperforming interchange both operationally and in terms of safety.

Response 4-9

As noted in the Project Description chapter, the development south of I-5 is identified for PAL 4 or later. Due to their speculative nature, PAL 4 activities are not evaluated in the EIR and will require additional environmental review and a Master Plan Amendment should they become viable or needed by Airports. Additionally, this particular PAL 4 activity, is located outside of the County of Sacramento's Urban Services Boundary and any commercial expansion into the area south of I-5 would require an amendment to the General Plan to allow urban development in that area. Subsequent environmental documents related to development south of I-5, will, among other things, include a full analysis of potential safety impacts related to the interchange.

Comment 4-10

Traffic and Operations/Traffic Safety Caltrans is concerned about the significant safety impacts from ramp queuing reaching/backing into the I-5 freeway lanes. This would be major safety concern that requires monitoring and a proactive approach to address this prior to having ramp queuing reaching the mainline. Drivers must have sufficient room to access the extended off ramp and decelerate on the off-ramp via the decelerating lane due to ramp queuing as this creates a potential rear end/sideswipe collision pattern from the through mainline traffic.

Response 4-10

The *Local Access, Safety, and Circulation* study (prepared by Kimley Horn, DSEIR Appendix TC-1) reviewed the I-5 ramp queuing for the Metro Air Park off-ramps with the addition of the new Master Plan Update projects and/or modifications. Per Table 28 and 29 of the study, neither the I-5 northbound or I-5 southbound off-ramps are expected to back up to the mainline under any scenario.

The study also evaluated the end ramp intersections for I-5 at Airport Boulevard, which is presented on page 11-14 of the DSEIR. In an email from Doug Adams on August 13, 2020, Caltrans provided a safety analysis in a document entitled "SMF Cargo Facility and MPU Comments_Caltrans_D3_CT Comments.docx". This evaluation was acknowledged in the DSEIR (pg.11-14), including the following excerpt : "Caltrans conducted a safety analysis for I-5 mainline and determined that there is a high rate of collisions associated with Airport Boulevard interchange. In order to remediate this safety concern, Caltrans is installing ramp meters, which should be operational in 2021. The addition of ramp metering will likely lead to extensive queues that may extend over the freeway affecting internal airport traffic operations. However, this would not be considered a new safety concern as traffic speeds are lower and drivers are preparing to make turning movements." Significant off-ramp queuing impacts were not identified in the existing plus project condition for the northbound off-ramp; however, safety hazards associated with ramp queuing may be seen in the existing plus project condition for the southbound off-ramp. The project will therefore be responsible for intersection improvements needed to restore safety at these intersections and off-ramp queuing, such as signalization or roundabout installation, when warranted. Mitigation Measure TC-5 is recommended to address this potential impact. The SCDA and Transportation will continue to coordinate with Caltrans as needed regarding potential safety impacts.

Comment 4-11

Please note, that Caltrans has adopted the 4 pillars of Traffic Safety as our new standard to reduce fatal and serious injury collisions on the State Highway System. This includes the use of FHWA Safety Countermeasures, evaluation of the Safe System approach to traffic safety, the use of innovative safety measures, and consideration of equity.

Response 4-11

Comment noted. The County will continue to prioritize safety considerations when evaluating interchange improvements through Intersection Control Evaluation (ICE) process and the project development process. This comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Comment 4-12

Caltrans recommends a full interchange redesign so that both intersections would adequately handle additional traffic volumes. We are concerned about the safety impacts with the queueing vehicles at the off-ramps and on Airport Boulevard well into the future. Additionally, the interchange would need to go through the Intersection Control Evaluation (ICE) process to determine the best intersection control for the location.

Response 4-12

As described in the *Transportation and Circulation* chapter (Chapter 11), "Level of Service" (LOS) is no longer used as a metric to analyze transportation and circulation impacts under CEQA. While LOS is not utilized as a metric in the CEQA document, the County of Sacramento does maintain minimum operating standards of LOS E or better. As shown in the *Local Access, Safety, and Circulation study* (Appendix TC-1) the off-ramp terminal intersections were evaluated for I-5 and Airport Boulevard. Both the northbound and southbound off-ramp intersections were found to deteriorate to unacceptable levels of congestion (i.e. LOS F). Significant off-ramp queuing impacts were not identified in the existing plus project condition for the northbound off-ramp; however, safety hazards associated with ramp queuing may be seen in the existing plus project condition for the southbound off-ramp. The project will therefore be responsible for intersection improvements needed to restore safety at these intersections and off-ramp queuing, such as signalization or roundabout installation, when warranted. Mitigation Measure TC-5 is recommended to address this potential impact. During the design and development of the intersection improvements, the County will follow Caltrans ICE process to determine the most appropriate intersection control. The full extent of improvements is not known at this point and will be determined through the project development process.

LETTER 5

Rachel Dubose, Air Quality Planner/Analyst, Sacramento Metropolitan Air Quality Management District, written correspondence; dated June 28, 2021.

Comment 5-1

Project Description: It is unclear from the project description and technical analyses whether the cargo facility was analyzed as a subset of the master plan or separate from it. Please clarify the project description and related discussions within the air quality, greenhouse gas and transportation chapters. Special attention should be given to clarifying the cargo facility relationship to the master plan in discussions for Table AQ-7: Summary of Operational Emissions for the Cargo Facility, and Table AQ-8: Summary of Operational Emissions for the Master Plan Update. (See "General Conformity" below for comments on Tables AQ-7 and AQ-8.)

Response 5-1

The Master Plan Update is the broad planning level document to guide when individual projects or elements are required to support passenger enplanement or air cargo growth. The proposed cargo facility is an individual project identified within the Master Plan Update project for PAL 1 and is currently under design; therefore, project-level analysis is included to identify project-specific impacts. Clarifying language has been added to the Project Description, Air Quality and Climate Change chapters.

Comment 5-2

Mitigation Measure AQ-4 requires that "all master plan projects which include loading docks, including the proposed cargo facility, shall ensure, through sale or leasing agreements, that the haul fleet consist of trucks that as at a minimum meet the emissions standards of a 2010 vehicle model, and as trucks are replaced they are replaced with the newest available model."

- The Sac Metro Air District recommends annual reporting to the County to ensure the project fleets are in compliance with this measure.
- To ensure compliance of hired and third-party fleets serving the facility, we also recommend project occupants verify each fleet has a Truck and Bus certificate of compliance, which would also be reported to the County annually.

Response 5-2

Mitigation Measure AQ-4 has been modified to include the clarifying implementation language, as follows:

> All projects which include loading docks, including the proposed cargo facility, shall ensure, through sale or leasing agreements, that the haul fleet consist of trucks

that at a minimum meet the emissions standards of a 2010 vehicle model, and as trucks are replaced they are replaced with the newest available model. **Annual reporting shall be provided to the Sacramento County Department of Airports. To ensure compliance of hired third-party fleets serving the facility, it is recommended that a Truck and Bus CARB Certificate is verified for each fleet.** In addition, the project shall include electrical hookups at all loading bays, and electric vehicle charging stations and/or infrastructure (e.g., conduit and panel space) to support future installation of truck charging stations for future zero-emission heavy-duty vehicles.

The revised mitigation measure will not introduce a new significant impact and does not alter the conclusions of the air quality analysis.

Comment 5-3

Mitigation Measure AQ-5 requires participation in a transportation demand management (TDM) program detailing strategies to reduce single occupant vehicle employee trips.

- The TDM measure should apply to all facilities within SMF master plan. As such, the following language should be removed from AQ-5: “For the proposed cargo facility and other projects which exceed the SMAQMD operational screening levels”. The sentence should simply start with “Prior to the issuance of occupancy permits…”

- The TDM program should consist of a written plan documenting employee VMT-reducing measures verified for technical adequacy by the Sac Metro Air District.

- Recommended new mitigation measure: Because the project is significant for operational emissions, an operational air quality mitigation plan (AQMP) must be developed that demonstrates a reduction in mobile source ozone precursors of at least 15%, as required by the County’s General Plan Policy AQ-4 and implementation measure B. *The AQMP may include measures from the TDM plan.*

- To discourage single occupancy employee commuting, the Sac Metro Air District recommends that the TDM plan and AQMP contain at least the following measures:

    - Sustainable mode subsidy for employees

    - Guaranteed Ride Home

    - Parking cash out and/or employee-paid parking

- The TDM plan should have a yearly reporting requirement. Please provide the Sac Metro Air District with a copy of the report.

- The Sac Metro Air District would like the opportunity to review and comment on the draft TDM and AQMP plans prior to approval.

Response 5-3

Mitigation Measure AQ-5 has been revised to address significant operational emission impacts for Master Plan projects or elements that were not previously identified in the prior EIR – Cargo Facility, Consolidated Rental Car Facility, commercial development north of I-5 and north of Elverta Road, and Concourse C. In accordance with General Plan Policy AQ-4, an Air Quality Mitigation Plan (AQMP) along with a Transportation Demand Management program (TDM)(Mitigation Measure AQ-6) will be prepared by the SCDA. The AQMP will need to demonstrate a reduction in mobile source ozone precursors of at least 15 percent. These plans will apply to all Airport projects under this Master Plan Update. The AQMP and TDM plans will be submitted to the County Planning and Environmental Review and the SMAQMD for review and approval or endorsement. The TDM will have annual reporting requirements to monitor plan effectiveness. The modified Mitigation Measure AQ-5 is as follows:

AQ-5 An Air Quality Mitigation Plan (AQMP) obtaining 15 percent or more shall be prepared by the Sacramento County Department of Airports. The AQMP shall be reviewed by the SMAQMD and approved by the Environmental Coordinator prior to issuance of occupancy permits of the first project or element under the Master Plan Update.

Pursuant to the CEQA Guidelines Section 15088.5, recirculation of an EIR is required when there is significant new information added to the EIR after public notice is given. Significant new information requiring recirculation include: new significant impact would result from the project or new mitigation measure; substantial increase in severity of an environmental impact would result unless mitigation is adopted; a feasible project alternative or mitigation measure considerably different from other previously analyzed would clearly lessen the environmental impacts of the project, but the project's proponents decline to adopt it; and the draft EIR was so fundamentally and basically inadequate. Recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR.

The SCDA agreed to the revised mitigation requiring the preparation of an Airport-wide Air Quality Mitigation Plan and Transportation Management Demand Program. It was further agreed upon with the SMAQMD, that the endorsement of these plans can happen after the approval of the Master Plan Update. The revised mitigation will allow for an evenly managed approach to reducing air quality impacts associated with development of new projects at the Airport and overall employee trip reduction; rather than a project-by-project approach. The revised mitigation measure will not introduce a new significant impact and does not alter the conclusions of the air quality analysis.

Comment 5-4

Mitigation Measure AQ-6 requires membership in or creation of a transportation management association (TMA).

- A non-revocable funding mechanism in perpetuity must be identified. This language should be included in the MMRP.
- As with AQ-5, please strike from the measure the following language: “For the proposed cargo facility and other projects which exceed the SMAQMD operational screening levels.”

Response 5-4

Mitigation Measure AQ-6 has been revised to include the preparation of a Transportation Demand Management program (TDM). The County Zoning Code section 5.9.6.G outlines the basic information a Transportation Systems Management Plan (which is similar to a TMD) should include. One of those measures is the provision of an owner/tenant association with responsibility for ongoing implementation of the plan, and a non-revocable funding mechanism. Since the TDM is a SCDA operated program, the TDM coordinator/program manager will be responsible for program implementation. The TDM will require a non-revocable funding mechanism. If it is in the best interest of the SCDA to join an existing Transportation Management Association, this mitigation measure does not limit that ability. The SCDA will be preparing the TDM for review by the SMAQMD and approval by the Environmental Coordinator. The revised mitigation measure will not introduce a new significant impact and does not alter the conclusions of the air quality analysis.

The modified Mitigation Measure AQ-6 is as follows:

AQ-6 A Transportation Demand Management Program (TDM) shall be prepared by Sacramento County Department of Airports. The TDM shall be reviewed by the SMAQMD and approved by the Environmental Coordinator prior to issuance of occupancy permits of the first project or element under the Master Plan Update. The TDM program must detail strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips by walking (internal to SMF), bicycling, carpool, and transit. The TDM program shall include, but is not limited to, the following:

a. Provide transportation information center and on-site TDM coordinator/program manager to educate employers, employees, and visitors of surrounding transportation options and ensure implementation;

b. Ensure that there is a non-revocable funding mechanism to support the program (CSD-1 or similar).

c. Promote bicycling and walking through design features. Examples may include showers for employees, self-service bicycle repair area, etc. around the project site.

d. Promote and support carpool use through parking incentives and administrative support. Examples may include ride-matching service or other methods.

e. Incorporate incentives for using alternative travel modes. Examples may include preferential load/unload areas or convenient designated parking spaces for carpool users.

f. TDM coordinator/program manager is responsible for preparing an annual reports to the Environmental Coordinator.

Comment 5-5

Mitigation Measure AQ-7 requires low VOC content paints that exceed the regulatory VOC limits put forth by Sac Metro Air District Rule 442.

- The mitigation measure should state that development and building improvement plans shall submit technical data sheets and a brief summary indicating the VOC content of any architectural coating proposed to be applied. In addition, the County should send annual notification to remind tenants that they are required to utilize VOC paints that exceed regulatory requirements.

Response 5-5

Mitigation Measure AQ-7 has been modified to include greater detail for implementation, as follows:

> Future development projects under the Airport Master Plan Update shall use low VOC content paints that exceed the regulatory VOC limits put forth by SMAQMD's Rule 442. Low VOC paints shall be no more than 10 grams per liter (g/L) of VOC. Alternatively, ~~the~~ pre-painted material that do not require the use of architectural coating may be utilized. **The contractor shall submit to the Sacramento County Department of Airports a schedule of all paint to be used to demonstrate compliance with this measure. Sacramento County Department of Airports shall communicate annually with facilities management and tenants regarding this requirement beyond the initial application of coatings.**

The revised mitigation measure will not introduce a new significant impact and does not alter the conclusions of the air quality analysis.

Comment 5-6

General Conformity:

- $PM_{2.5}$. The DEIR states that the General Conformity de minimis threshold $PM_{2.5}$ is 70 tons per year; however, Sacramento is in moderate non-attainment, not severe, so the threshold is 100 tons per year.

- PM_{10}: Sacramento is in attainment-maintenance for PM_{10}, with a de minimis threshold of 100 tons per year. Please discuss this in the EIR.

- NO_x and ROG:

    - The DEIR does not discuss general conformity for NO_x and ROG, for which Sacramento is in severe non-attainment. The de minimis thresholds are 25 tons per year for each pollutant.

    - The sum of NO_x values in Tables 7 and 8 suggest that conformity would be exceeded; however, this is difficult to ascertain due to the unclear relationship between the Master Plan and the Cargo Facility (see Project Description comment at the beginning of this letter).

Response 5-6

The threshold for $PM_{2.5}$ has been updated to 100 tons per year. Tables AQ-7 and AQ-8 includes a row, which identifies if the project "Exceeds Threshold". This question is answered for both the Federal and local thresholds. The discussion for Federal General Conformity Determination has been updated with the following clarifying information:

> General Conformity requirements only apply to federally designated maintenance and nonattainment areas. The proposed project is located in an area federally designated as severe nonattainment for the 8-hour ozone standard and **a moderate non-attainment area for** the 24-hour $PM_{2.5}$ standard. **The Sacramento area is also in attainment-maintenance for PM_{10}.** The applicable General Conformity *de minimis* threshold values are 25 tons per year for NO_x and ROG, and ~~70~~**100** tons per year for $PM_{2.5}$ **and PM_{10}**.
>
> The prior EIR determined that buildout of Phase 1 and 2 of the SMF Master Plan conforms with the applicable SIP. The proposed project will accommodate growth over the next 20 years; however, this growth would not substantially increase the number of aircraft operations as projected in the prior document. The aviation emissions of the proposed project are included in the Sacramento Regional Ozone SIP for the 2015 Ozone Standard and the Second 10-year PM_{10} Maintenance Plan. SMAQMD is coordinating with the SCDA to provide emissions estimates from the proposed project for inclusion in future SIPs.
>
> **According to Federal Aviation Administration (FAA) regulations (40 CFR 93.153(c)(xii)) and 1050.1F Desk Reference, airport master plans are not approved by the FAA and therefore, are not required to complete a General Conformity determination. Individual projects or elements under the Master Plan which meet the specific review requirements of FAA Guidance Section 163, will go through project specific Conformity Determination under the National Environmental Policy Act (NEPA) at the time federal funding or approval is requested. Even though General Conformity is not required for the proposed Master Plan Update, project specific analysis has been**

provided to demonstrate if individual projects or elements under the Master Plan Update would exceed federal thresholds for General Conformity.

Changes from the prior EIR analysis include the proposed cargo facility, new Concourse C, consolidated rental car facility, and the proposed commercial development area. The construction and operational emissions are provided in Table AQ-5 and Table AQ-7 for the proposed cargo facility **(PAL 1)**. The estimated construction and operational emissions are provided in Table AQ-6 and Table AQ-8 for the **other** new Master Plan Update projects **(PALs 2 and 3)**. Construction emissions that exceed **the local air quality management district** thresholds would be mitigated through payment of in-lieu fees. The mitigated project**s or elements under the proposed Master Plan Update** will not exceed ~~General Conformity~~ **Federal thresholds for NO_x, $PM_{2.5}$ or PM_{10},** and therefore, no further General Conformity review is necessary.

The Sacramento County Planning and Environmental Review (PER) department met with the Sacramento County Department of Airports (SCDA), Sacramento Metropolitan Air Quality Management District (SMAQMD) and the Environmental Protection Agency (EPA) to discuss the comments received. Based on clarifying information from the FAA, General Conformity is not required for the Airport Master Plan, but individual projects under the Master Plan subject to FAA approval or funding will go through General Conformity. All parties agreed that the comment is no longer applicable and the SMAQMD submitted an Addendum to their DSEIR comment letter (Letter #7), dated September 24, 2021, recommending edits to the Air Quality Chapter to reflect the clarifying information. The significance determination and conclusions of the DSEIR remain adequate.

Comment 5-7

Toxic Air Contaminants: The DEIR stated that diesel particulate matter (DPM) is the only toxic air contaminant associated with the project. The discussion/analysis should be corrected to reflect the fact that there are other toxic air contaminants that the project will emit. These include total organic gases (TOG) and $PM_{2.5}$.

Response 5-7

The Air Quality EIR chapter has been revised to include the additional toxic air contaminants noted in the comment. It should be noted that this addition does not affect the DSEIR analysis or conclusions.

IMPACT: EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS

Existing airport operations include aircraft emissions, mobile emissions, landscape maintenance, and building emissions which generate Toxic Air Contaminants (TACs) including total organic gases and $PM_{2.5}$. These emissions are part of the CEQA baseline and Master Plan elements considered in the prior EIR were analyzed for impacts associated with TACs.

The conclusions of the prior EIR found that the Master Plan would result in less than significant impacts related to TACs.

The proposed Master Plan Update projects will emit TACs including total organic gases (TOG) associated with building construction and operation, and $PM_{2.5}$ associated with construction equipment and diesel engine trucks. The exposure of sensitive receptors (e.g., existing and future offsite residents) to TACs from project-generated construction and operational sources are discussed below. The following discussion focuses on Diesel Particulate Matter, the TAC with the greatest health effects according to the SMAQMD Guide.

DIESEL PARTICULATE MATTER

The ~~only~~ **greatest** TAC emitted from the project would be Diesel Particulate Matter (DPM). When evaluating whether a project has the potential to result in localized impacts, one must consider…

Comment 5-8

Greenhouse Gases:

- The Sac Metro Air District recommends that the County incorporate our Best Management Practices for greenhouse gas construction emissions, which can be found here: http://www.airquality.org/LandUseTransportation/Documents/CH6ConstructionMitMeasuresFINAL5-2016.pdf . Best practices include the use of renewable diesel fuel and lower carbon concrete options.

- For electric vehicle charging infrastructure, the EIR should state what the current CalGreen standards is for each type of airport use and give an estimate of parking spaces/infrastructure needed.

Response 5-8

The analysis presented in the SEIR (pg. 12) identifies that projects under the Master Plan Update may produce GHG emissions in excess of construction thresholds. These emissions were amortized over the 30-year life of the project and are included in the GHG emission for operational impacts. Operational impacts would exceed annual thresholds and impacts are considered significant and unavoidable. Mitigation was recommended to reduce operation GHG emission impacts. However, it is recognized that application of the Best Management Practices for greenhouse gas construction emissions are feasible measures to further reduce impacts. The text of the Climate Change Chapter has been updated to reflect this discussion and the Best Management Practices for greenhouse gas construction emissions have been added as Mitigation Measure CC-2. The addition of this mitigation measure will not introduce a new significant impact and does not alter the conclusions of the climate change analysis. This measure will help further reduce a significant and unavoidable impact associated with GHG emissions.

The 2019 California Green Building Standards Code (CALGreen, California Code of Regulations Title 24, Part 11) requires that new construction and major alterations include adding electric vehicle (EV) capable parking spaces, which have electrical panel capacity, a dedicated branch circuit and a raceway to the EV parking spot to support future installation of charging stations. All new construction is required to comply with the latest CALGreen code. The CALGreen code is updated every three years and the latest version of the code is the 2019 CALGreen code that became effective on January 1, 2020.

The current CALGreen building code requires EV capable spaces based on the total number of parking spaces. Since the proposed Cargo Facility would include 1,314 automobile parking spaces, 79 of those would be required to be EV capable (i.e., CALGreen 2019 requires 6 percent of spaces to be EV capable when the total number of parking spaces is 201 or greater). It should be noted that future development that occurs under the Master Plan Update would be required to comply with the latest CALGreen code at that time.

LETTER 6

City of Sacramento Community Development Department, Cheryl Hodge, Senior Planner, written correspondence August 3, 2021.

Comment 6-1

On October 30, 2020, the City of Sacramento (City) provided formal comments for the Notice of Preparation for the Draft Supplemental Environmental Impact Report (DSEIR) for Sacramento International Airport (SMF) Master Plan Update (Project) which formally kicked-off the environmental review process. When the DSEIR was released for public review, the County sent notification to the City via standard USPS mail. The City did not receive the notice electronically and many of us are working remotely while COVID-19 measures are still in place. As such, we only recently became aware of the availability of the DSEIR for public review. The City's comments below reflect our limited review of the DSEIR within the remaining time period. The Planning Division of the Community Development Department presents the comments below as a single letter representing multiple City departments.

Response 6-1

The County acknowledges your comment letter and has provided a response to comments, below.

Comment 6-2

The DSEIR states that the updated SMF Master Plan will not harm any existing Habitat Conservation Plan (HCP). [It] does not discern how this will be accomplished. The DSEIR also references these HCPs (Natomas Basin and Metro Air Park), but as the County is not a signatory to either plan, dismisses any impact that could be had to these plans. To clarify and ensure that there are no impacts to either the Natomas Basin or Metro Air Park HCPs, the City of Sacramento requests that any mitigation lands be designated on existing Airport/County-owned lands. This will allow the existing HCPs the flexibility needed in finding lands in the Natomas basin for mitigation in accordance with their respective requirements and enable their successful implementation to continue.

Response 6-2

The Impact Analysis discussion on pages 4-70 and 4-71 detail that the proposed project does not expand beyond the lands owned and operated by the SCDA. The Natomas Basin and Metro Airpark Habitat Conservation Plans do not identify existing or potential mitigation lands that are owned by the County. The County currently has a surplus of mitigation lands for Swainson's hawk, and may choose to use the surplus land for the proposed project Swainson's hawk mitigation needs. Pursuant to the Natomas Basin Habitat Conservation Plan (NBHCP), development within the Airport was considered when determining sufficient availability of mitigation lands within the Natomas Basin. It is the expansion of Airport property that was not contemplated in the NBHCP. This was confirmed through personal communication with the Executive Director of the Natomas Basin Conservancy, John Roberts. Since this project does not propose expansion beyond that owned by the County, there is sufficient land within the Natomas Basin to support the remaining acres of authorized development and the proposed development at the airport.

Comment 6-3

The updated SMF Master Plan shows a much larger area to be paved than had been expected in the past. City staff would encourage much of the new paved area proposed for the new air cargo terminal to be pervious paving or other best practice to reduce impacts on the ground water basin and potential flooding/stormwater runoff issues.

Response 6-3

The proposed cargo facility will have a substantial amount of new impervious surfaces for the building and loading docks, airplane apron/taxiway, and employee parking. Pervious pavement cannot be considered for the loading docks and airplane apron/taxiway. Pervious pavement is also not allowed for emergency vehicle access in the drive isles of parking lots. Pervious pavements are not a requirement in County improvement standards; however, this comment has been forwarded to the SCDA and the Board of Supervisors for consideration.

A stormwater detention/water quality basin is proposed within the project footprint to ensure surface water runoff does not exceed existing volume conditions and is treated properly before entering the storm drainage system. The future detention facility capacity and design will go through County Department of Water Resources review consistent with the County NPDES permit and Stormwater Quality Guide.

Comment 6-4

The traffic analysis provided by Kimley-Horn specifies the new thresholds of VMT rather than LOS, but does not appear to provide context of the analysis in the cumulative impacts. Notably, the Grandpark and Upper Westside master plans currently in process with the County (and in review prior to this report being released) are omitted. Knowing the context of the impacts from the updated Airport Master Plan in context with these two large master plans is key for the cumulative analysis of this plan.

Response 6-4

The VMT threshold for the expansion of gates is a net regional VMT increase (i.e. total VMT with the project is greater than total VMT without the project). In this case, the land use context outside of the project would not change the results. Because the alternative to expanding gates is that more drivers will use SFO, OAK, or SJC, the project will necessarily result in cumulative regional VMT decreases, regardless of whether a specific development project is assumed or not.

It is generally understood that with increased development, VMT decreases; therefore, the conservative approach is to not assume future (cumulative) development. In other words, if the larger master plans in the County were considered, the analysis would only improve compared to Existing conditions. As the City correctly points out, the new master plans that would be constructed in the vicinity of SMF will only serve to reduce the average commute time for employees were employees to relocate there. However, there is no guarantee that any employees would be located there so the construction of these master plans cannot reduce any of the impacts identified. In addition, consistent with OPR guidelines, existing impacts must be addressed, even if not applicable in the future due to improved conditions. Therefore, the Cumulative analysis for employee commute VMT was not included in the report.

Comment 6-5

The Draft Supplemental Environmental Impact Report for Sacramento International Airport (SMF) Master Plan Update should show the peak hour traffic volumes without and with the buildout of the Master Plan at SR 99 and Elkhorn Boulevard interchange intersections and at any access roadways to the airport.

Response 6-5

As described in the *Transportation and Circulation* chapter (Chapter 11), “Level of Service” (LOS), which is based, in part, on peak hour traffic volumes, is no longer used as a metric to analyze transportation and circulation impacts under CEQA. While LOS and associated peak hour traffic volumes are not utilized as a metric in the CEQA document, the County of Sacramento does maintain minimum operating standards of LOS E or better. As shown, in the *Local Access, Safety, and Circulation study* (Appendix TC-1) the requested information (i.e. traffic volumes at SR 99 and the Elkhorn Boulevard interchange intersection and other access roadways to the airport) is available for informational purposes.

Comment 6-6

A fair share percentage calculation towards future improvements at SR 99 and Elkhorn Boulevard interchange must be provided.

Response 6-6

Per SB 743, LOS is no longer a metric used to identify a significant transportation impact under CEQA (see Response 6-5). The SEIR did not identify a conflict with a program or policy related to roadway circulation, nor were safety impacts identified at the Elkhorn Boulevard SR 99 interchange.

Comment 6-7

Any modifications to roadways, intersections, and driveways in City of Sacramento are subject to review and approval of Department of Public Works.

The construction Contractor must provide a construction traffic control plan per City Code 12.20.030 to the satisfaction of the City Traffic Engineer. The plan shall ensure that acceptable operating conditions on local roadways and freeway facilities are maintained. At a minimum, the plan shall include:

- The number of truck trips, time, and day of street closures.
- Time of day of arrival and departure of trucks.
- Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting.
- Provision of a truck circulation pattern.
- Provision of driveway access plan so that save vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas).
- Maintain safe and efficient access routes for emergency vehicles.
- Manual traffic control when necessary.
- Proper advance warning and posted signage concerning street closures.
- Provisions for pedestrian safety.

A copy of the construction traffic management plan shall be submitted to local emergency response agencies and these agencies shall be notified at least 14 days before the commencement of construction that would partially or fully obstruct roadways.

Response 6-7

Comment noted. This comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Letter 7

Rachel Dubose, Air Quality Planner/Analyst, Sacramento Metropolitan Air Quality Management District, written correspondence; dated September 24, 2021.

Comment 7-1

Please include this letter as an addendum to the Sacramento Metropolitan Air Quality Management District's comments on the Draft Supplemental Environmental Impact Report (DSEIR) for the Sacramento International Airport Master Plan Update (Master Plan Update), sent on June 28, 2021.

The Final Supplemental Environmental Impact Report (FSEIR) should explain that general conformity determinations, which are conducted by the Federal Aviation Administration (FAA), do not apply to planning and information-related actions[1], but rather to the subsequent individual projects to be implemented under the Master Plan Update. Within this discussion, the FSEIR must clarify the relationship between the Master Plan Update and the cargo facility.

Response 7-1

Comment noted. This comment has been addressed in Response 5-6 and the Air Quality chapter.

Comment 7-2

To reflect the above information, we make the following recommendation: for the 'Master Plan Update' portion of the air quality analysis, we recommend removing references to the general conformity de minimis thresholds within the emissions tables.

Response 7-2

Comment noted and the text of Tables AQ-6 and AQ-8 have been updated accordingly.

Comment 7-3

For cargo facility emissions tables, the conformity de minimis thresholds can be retained, since at this time it is known that a conformity analysis will need to occur. Note, however, that the FAA will conduct its own air quality analysis, and the results may be different than reported in the FSEIR.

Response 7-3

Comment noted. The information has been retained in the Air Quality tables and clarifying text has been added to the discussion analysis noting that the FAA will conduct it's own air quality analysis which may be different than reported in this document.

Comment 7-4

The above clarifications, reflected within the FSEIR, should resolve concerns we raised in our comment letter regarding DSEIR Tables 7 and 8.

Response 7-4

Comment noted.

LETTER 8

Ellery Kuhn, Resident/General Public, written correspondence; dated May 24, 2021.

Comment 8-1

Failure to Involve Interested Parties The engagement efforts initiated by residents were inconclusive. However, on January 17, 2020 counsel retained by the City of Sacramento filed with Federal Aviation authorities a request that the city be involved in the development of anticipated changes in departure procedures and any associated environmental analysis recommended by the airport. Specifically, the City requested the opportunity to comment before the specified procedures were finalized and implemented. Therefore, to the degree that the Master Plan update and Draft EIR is intended to interlock, relate, be dependent on or justify the outcome of 1/17 referenced practices, the outside counsel retained by the City of Sacramento (or the City Attorney's office itself), should be a party to and should have been given an opportunity to participate in the development of the Draft EIR for the SMF Master Plan Update. Despite soliciting contributions from other entities (page 1-21), there is no evidence that the airport reached out to the official or the retained counsel specifically identified as interested in airport environmental assessments.

Response 8-1

The Notice of Preparation (NOP) and the Draft Supplemental Environmental Impact Report (DSEIR) was sent to the City of Sacramento for review and comment. The NOP was mailed to the City of Sacramento (I Street address) on September 15, 2020. Comments on the NOP were received from the City of Sacramento Community Development Department (dated November 5, 2020) that indicated, "The Planning Division of the Community Development Department presents the comments below as a single letter representing multiple City departments." The City of Sacramento was further afforded an opportunity to provide comments on the DSEIR (mailed to Cheryl Hodge, City of Sacramento, I Street address) and comments were received on August 3, 2021. The City of Sacramento's comments on the DSEIR again state, "The Planning Division of the

Community Development Department presents the comments below as a single letter representing multiple City departments." Comments provided by the City of Sacramento are addressed, herein. Following the release of the NOP, a virtual Agency Scoping meeting was held on October 6, 2020, and a separate email invitation was sent to the Planning Department on September 30, 2020. The City did not participate in the scoping meeting.

Neither the City Attorney's office, nor their retained outside counsel, submitted a written request to County Planning and Environmental Review to receive a separate and discrete notice. It is presumed that City of Sacramento coordinated with their Attorney's Office and/or retained outside counsel and the comments received represent their combined comments, as their letter implies. Comments provided by the City of Sacramento are addressed in Letter #6 above.

Comment 8-2

Public Meeting "Substitution" and short Master Plan response period. According to the Rickelton's May 2020 email, and the title page of an associated PDF presentation, a "virtual" master plan presentation and opportunity for community feedback was being offered. This characterization posed several problems. Firstly, the period of public feedback was shockingly constrained to a single calendar week of seven days announced at the beginning of and taking place over a three-day holiday weekend! This alone hardly constituted a serious effort to (quoting the Rickelton communication directly) "maintain open lines of communication and demonstrate the Department's commitment to planning with stakeholders." A normal and reasonable standard for public feedback is 45 days, as in the adoption of rules under the Administrative Procedure Act. Further, while public gatherings were constrained during the medical emergency posed by Covid-19, this did not prevent substitutions, such as a virtual town hall or a phone forum, with appropriate planning and sufficient notification, which was not attempted in this case. It is unclear why the matter had to be so rushed as to shockingly foreshorten public notice and comment, probably contrary to statutory requirements.

Reality is, the airport did not in this instance and, based upon the evidence of past practice relative to responding to individual noise complaints, does not sufficiently engage the stakeholder public and interested groups in decision-making affecting the local community. When recently a runway closure for upgrades resulted in a dramatic intensification of noise and risk, the airport made no known effort to solicit community input on mitigation steps to lessen such impacts. When replying to the expressions of noise and safety concerns by individual residents, airport responses are typically so dismissive, deflective or off-topic as to dash any hope of remediation or follow-up. If the airport intends the "community to be a part of the success and growth of our Airports," as the Director of Airports has been quoted, then a great deal more effort to cultivate community involvement is needed. "Direct, up front notification" (Rickelton letter) of a handful of participants in an inconclusive engagement that took place in the past and was, moreover, discontinued by the airport, can in no way substitute for a full-throated initiative, reversing practices which have only contributed to discourage public involvement up to this point. To so shamelessly act insults the community and undermines good governmental practice.

Response 8-2

This comment refers to early public engagement conducted by the Sacramento County Department of Airports (SCDA) when they were seeking input from interested parties on the Draft Master Plan Update. Please note that SCDA's early public engagement occurred prior to initiation of environmental review of the Master Plan Update, under the California Environmental Quality Act (CEQA), and is separate from the required public review and notification process as outlined in the CEQA Guidelines (Sections 15200 to 15209 and those discussed in Article 7. EIR Process). According to the SCDA, public comment on Draft plans usually occurs in a single-day, public workshop. Due to the COVID-19 Public Health emergency, the SCDA held a virtual meeting and allowed a week for public comments to be submitted – May 22 – 29, 2020.

Sacramento County Planning and Environmental Review (PER) was directed to initiate CEQA review at the July 28, 2020, Board of Supervisors meeting following the Board's acceptance of the Final Draft Master Plan Update. The following CEQA public comment periods were followed:

- 30-day comment period for the NOP (September 14 through November 14, 2020); and,

- 45-day comment period for the DSEIR (May 14 through June 28, 2021).

Noticing was sent to Federal, State, and Responsible Agencies, all persons that have requested to be placed on the mailing list for this project, and interested parties as determined by the SCDA.

Regarding on-going communication and notification related to the Sacramento International Airport (SMF) to the surrounding community, the SCDA provides updated environmental information (including information on noise, wildlife management, and sustainability) on their website: SCAS > Noise (sacramento.aero). The SCDA is not obligated to notify the surrounding community of regular airport maintenance.

Comment 8-3

Critically Missing Goal. Closure of the west runway in 2019 was an example of the kinds of airfield adjustments included on page 7 of the PDF Master Plan presentation. However, the goal of safety maximization for residents adjacent to the airport did not appear among the construction planning goals stated on page 3 of the PDF General Plan presentation, nor is it addressed in the Safety topics of the Draft EIR. This is, however, a subject directly within the scope of the planning effort and its omission is negligence on the part of airport officials. West runway closure specifically resulted in a dramatic intensification of risks and noise to nearby Natomas residents for a significant period of time. While the possibility of a catastrophic event taking place might seem statistically rare, events have occurred which suggest differently. A La Guardia 2009 departure which, after striking a flock of geese, was forced to ditch into the Hudson River is the prototypic scenario. The same bird species responsible for the engine failures of the La Guardia flight inhabit the wetlands discussed in the Draft EIR, but their presence is never mentioned. The bird species in question is not only seen to migrate at the same altitude and paths taken by departing flights, they inhabit Natomas all year long, as opposed to seasonally. To ignore and leave unmentioned catastrophic risks because they are inconvenient to contemplate or discounted as statistically uncommon is especially irresponsible because Natomas is exposed to exactly the very same hazards that the La Guardia flight encountered. Moreover while catastrophic concerns have been repeatedly brought to the attention of the airport, they have yet to be included in mitigation or preventative measures made widely known to the community.

Response 8-3

This comment references information provided during the early public outreach conducted by SCDA on the Draft Master Plan Update. As indicated in the Project Description Chapter of this EIR, the Master Plan Update does not propose a change to the existing flight paths, nor does it propose an increase in flights over what was contemplated in the original Master Plan (2007).

Background information regarding the Wildlife Hazard Management Plan employed at SMF (in accordance with the Code of Federal Regulations), is presented in the Biological Resources Chapter (page 4-21). Aircraft safety for commercial airlines and cargo planes utilizing SMF is regulated by and under the jurisdiction of the Federal Aviation Administration (FAA). It is the responsibility of local land use authorities to ensure that new land uses are not incompatible with the airport's safety zones. The DSEIR concludes that the proposed commercial land use changes presented in the Master Plan Update are compatible with the safety contours. No safety impacts were identified for the proposed land uses.

Comment 8-4

Noise Contours versus Actual Noise Pollution. With respect to south-flow departures, the noise contours depicts on the compatibility map of the 2020 PDF General Plan presentation and the Draft EIR are misleading and unrepresentative of reality, while at the same time analytically relied upon throughout. Air traffic actually bifurcates into two lobes, one southeast and the other directly east roughly along Del Paso Road. Both past and present actual paths were accurately reflected on pages 2 and 3 of the previously referenced 1/17 City letter to the FAA. Reality is, flight paths bank toward and then pass directly over Natomas residential communities, instead of – in conformity with the east contour border depicted on the compatibility map – over land deliberately set aside for noise abatement and which in an emergency would be preferred if a flight is aborted proximate to liftoff. Also, the FAA has recently acknowledged that the 65 dB metric repeatedly relied upon in the Draft EIR when determining acceptable levels of noise pollution is being reassessed as it has become increasingly clear that unacceptable levels of aircraft noise take place at much lower decibel levels. The responsible manner in which to approach this difficulty in the Draft EIR is not to rely on misleading and outdated noise contours or questionable metrics, but rather to accurately ascertain the actual problems, environmental and otherwise, which have been identified by Natomas residents.

Response 8-4

The DSEIR includes a “Regulatory Setting” discussion in both the Land Use and Noise Chapter that identifies the existing policies and regulations that guide development in and around SMF. Please note that the Noise Chapter provides a brief summary of the changes made by the FAA in flight patterns since the adoption of the Airport Master Plan in 2007. As indicated, the SCDA and Sacramento County have no authority to modify or change flight patterns; however, the SCDA has provided comments received from nearby property owners to the FAA in response to implementation of the NextGen flight system. This information is provided for disclosure purposes only because the proposed Master Plan Update does not result in any project that would modify or change flight patterns or their associated noise contours.

The scope of the evaluation of noise impacts required for CEQA purposes is discussed in the “Impact: Generate A Substantial Permanent Increase In Ambient Noise Levels In The Vicinity Of The Project In Excess Of Standards Established In The Local General Plan Or Noise Ordinance, Or Applicable Standards Of Other Agencies” section of the Noise Chapter. This section indicates that the focus of the noise impact analysis is on those projects that are newly proposed in the Master Plan Update that have the potential to increase noise levels. Those new uses include the following:

- New cargo facility east of Runway 16R (PAL 1);
- Improvements to Elverta Road (PAL 1);
- Elkhorn Road Extension (PAL 1); and
- Commercial development North of Elverta Road, and north of I-5 (PALs 2 and 3).

The analysis concluded that the Master Plan Update would not result in a substantial permanent increase in ambient noise levels and that impacts are less than significant. The published noise contours included in the Airport Compatibility Land Use Plan for SMF were not utilized to determine the noise levels that would be produced by the identified new uses. The published noise contours are used to determine if a new project would be placed within an unacceptable airport noise contour. The proposed new Master Plan Projects are consistent with the published noise contours. The noise analysis used the anticipated noise produced by the new uses to determine if the new uses would impact nearby sensitive receptors. The analysis concludes that the new uses would not result in substantial permanent increases in ambient noise levels at any sensitive receptor.

The changes in the proposed Master Plan Update are focused on placement and phasing of airport facilities based on recent enplanement projections which do not exceed the prior Master Plan projections. The analysis presented in the DSEIR appropriately focuses on the land uses within the SMF and compatibility with the published noise contours.

<u>Comment 8-5</u>

<u>Public concerns brushed aside in SMF master plan adoption.</u> In a late Friday (6/5/2020) website posting, SMF responded to thirty-seven discrete written submissions commenting on revisions of the SMF master plan then underway. While not publishing original submissions, from the summaries prepared by airport staff it was clear that at least 34 of the 37 expressed safety and noise concerns, frequently with multiple observations, points and requests, including a request for an extension of the comment period. As the seven days allotted for comment, according to the airport, was an "extended" multi-day "online workshop" and "additional public review and comment" will be provided later, during environmental review, the airport made no accommodation for comment extension. Safety and noise concerns ended up walled off as "aspects of the airport beyond the basic scope of the master plan." Compartmentalizing noise and safety, and then separately conducting environmental review, guaranteed that at no single point of decision-making would such concerns be taken into account with respect to overall airport operations. From past experience Natomas residents know that activities within the scope of the general plan, especially changes in departure practices absent efforts to mitigate effects of same, can actually impact residents enormously. And as the Draft EIR leaves unaddressed the previously expressed community objections and process abuse, the feared compartmentalization has clearly taken place.

<u>Response 8-5</u>

The DSEIR prepared for the Master Plan Update analyzed noise and airport safety concerns in relation to the proposed project and supplements the environmental analysis of the prior EIR. CEQA Guidelines Section 15162 and 15163 outlines the requirements regarding the preparation of a Subsequent or Supplemental EIR. If the changes to a project meet the needs of Section 15162, but those changes would only require minor modifications of the prior Environmental Document, a Supplemental EIR can be prepared. The Supplement need only contain information necessary to make the previous EIR adequate for the project as revised (Section 15163(b)). The court determined in *Friends of the College of San Mateo Gardens v. San Mateo County Community College District* (2016) 1 Cal.5th 937, that a Subsequent or Supplement document can be prepared if a portion of the prior document retains some informational value.

Since the proposed Master Plan Update does not include changes to the pattern or number of flights, there is no substantial change in the project that would require a Subsequent EIR; therefore, no additional analysis regarding impacts already disclosed in the Final EIR for the Master Plan is required. Accordingly, the court decision in *Friends of the College of San Mateo* Gardens, cited directly above, applies to the proposed Master Plan Update and preparation of the DSEIR is sufficient and legally adequate. A brief history of the changes to the FAA flight system was discussed in the DSEIR (page 9-6). This system has been in place since 2015, and underwent full environmental review under the National Environmental Policy Act. The public was provided the opportunity to comment on the project in April 2014, where notices were released through the Sacramento Bee, local libraries, and local government agencies. Since implementation of the FAA NextGen system, the community has raised concerns to the SCDA regarding flight patterns and associated noise. In 2018, County Staff responded to comments from the community on topics similar to those raised in this Response to Comments and are provided in Appendix RTC-2. Finally, as noted above in Responses 8-3 and 8-4, the SCDA and Sacramento County have no authority to modify or change flight patterns; however, the SCDA has provided comments received from nearby property owners to the FAA in response to implementation of the NextGen flight system. This information is provided for disclosure purposes only because the proposed Master Plan Update does not result in any project that would modify or change flight patterns or their associated noise contours. Aircraft safety for commercial airlines and cargo planes utilizing SMF is regulated by and under the jurisdiction of the Federal Aviation Administration (FAA).

Comment 8-6

Other Draft EIR Shortcoming, Omissions and CEQA Failures with respect to the discussion of airport associated air pollution fails to take into account the odors residents can experience both with aircraft are taking off and when passing overhead…

Response 8-6

Comment noted. The proposed project does not propose changes to the flight operations at the airport and odors due to aircraft are considered part of the CEQA baseline condition. Therefore, no discussion of aircraft emitted odors was required in the Draft SEIR. It is important to note that the CEQA baseline is the current environment or plans and policies in place at the time the Notice of Preparation is released. According to CEQA Guidelines Section 15125(a), "the physical environmental conditions in the vicinity of the project, as they exist at the time the environmental analysis is commenced constitutes the environmental baseline." Further, the Court of Appeal determined in Fat v. County of Sacramento (2002), 97 Cal.App.4th 1270, that the CEQA document is not a forum for determining the nature and consequences of the prior conduct of a project applicant, even if the existing conditions (either on-site physical conditions or operations) are the result of unpermitted activity, including activity inconsistent with existing permits the Court in *Fat* upheld the County's selection of the NOP issuance date as the baseline date for the IS/MND, despite the fact that the Conditional Use Permit for the airport in question had expired many years earlier. Lead agencies must evaluate impacts against actual conditions existing at the time of CEQA review and are not required to "turn back the clock" and evaluate impacts compared to a baseline condition that predates the proposed project.

The existing conditions constitute the CEQA baseline. For SMF, the existing flight patterns, noise, and odors associated with aircraft are considered baseline, and only the proposed changes by the project are analyzed under CEQA.

Comment 8-7

Other Draft EIR Shortcoming, Omissions and CEQA Failures with respect to take-off noise, the Draft EIR also fails to address the north-flow take-off engine noises which can be carried into residential Natomas by the wind. This problem is particularly noticeable when the East Runway is use for departures.

Response 8-7

Comment noted. The proposed project does not propose changes to the flight operations at the airport and aircraft engine noise is considered part of the CEQA baseline conditions. Refer to Response 8-6.

Comment 8-8

Other Draft EIR Shortcoming, Omissions and CEQA Failures. Also, anyone familiar with the roads between West Natomas and the airport can attest to the degraded condition of Power Line Road between Bayou and Del Paso Roads. This stretch of roadway already suffers severe shoulder deterioration. Nevertheless, the Draft EIR fails to address this matter under relevant topic.

Response 8-8

This comment is regarding the current degradation of the shoulder of Power Line Road. The maintenance of County roadways are the responsibility of the Sacramento County Department of Transportation Operations and Maintenance Division. Community members can report roadway conditions through the County's 311 service. In addition, several projects within the immediate vicinity have identified needed improvements and widening along area roadways, including Power Line Road.

Letter 9

Michael McKenna, Resident/General Public, written correspondence; dated July 31, 2021.

Comment 9-1

Dear Sirs, everything the Sacramento Airport has done since the implementation of Next Gen has unfairly targeted the minority of people living directly under the concentrated new departure path (when planes are departing south). We get low, loud planes a minute apart during a great portion of the day. When we open the door to go get the mail a plane is coming over. When we go to the side of the house to put out the garbage there is a plane coming over, when we go into our backyard there is a plane coming over, when we go to get the mail there is a plane coming over and before we can walk back into our house another plane comes over. When I go for one of my bike rides a plane is coming over. when I am approaching our house after my ride there is another plane approaching directly over our house. And during my long rides all over the city I almost never see any planes.

Response 9-1

Comment noted. The proposed project does not propose changes to the flight operations at the airport and aircraft engine noise is considered part of the CEQA baseline conditions. Refer to Response 8-6. In addition, please refer to Response 8-5: the SCDA does not have any control over the flight patterns. Additionally, this comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Comment 9-2

A minority of the people living near the airport are being unfairly targeted under the new concentrated flight paths. The FAA and Airport think if they only screw over a minority of the people near the airport the majority who have no overflights will drown out those that do. They are turning neighbor against neighbor in a callous effort screw us over.

Response 9-2

Please refer to Comment 8-5: the SCDA does not have any control over the flight patterns. Additionally, this comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Comment 9-3

There is an easy and sensible solution. The airport can fly south over EMPTY fields only one more mile at takeoff going into the wind, as they are supposed to do, before turning left (east). Since over 80% of the flights go to destinations south of the airport this would be logical and efficient. In doing so they would miss OVER 99% of the houses near the airport.

Response 9-3

Comment noted. Please refer to Comment 8-5; the SCDA does not have any control over the flight patterns. Additionally, this comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Comment 9-4

What is happening is just not right and fair. Please give us our lives back. The airport has consistently lied to us and refuses to take the health and safety of people living nearby into account when planning their routes.

There is a better way to do this, please make the airport accountable to its neighbors living nearby.

Response 9-4

Comment noted. This comment does not present any issue or make any substantive comment about the adequacy of the DSEIR. For that reason, no further response to this comment is required.

Letter 10

Ellery Kuhn, Resident, written correspondence; dated July 31, 2021.

Comment 10-1

The concerns of West Natomas inhabitants south and east of the airport have not been adequately acknowledged or addressed in either the Draft Supplemental EIR for the SMF Master Plan Update or the Updated plan itself. Subsequent to 2015, "South-flow" departures—the SMF takeoff pattern when prevailing winds are from the south and west (aka "off-shore," or "Delta Breeze")– pass in concentrated flight routes over residential communities early in takeoff. Consequently, residents beneath experience significant noise pollution, both in terms of loudness and frequency, typically to the extent that "normal" enjoyment of home life is denied.

Response 10-1

Please refer to Responses 8-5 and 8-7.

Comment 10-2

Also, engine failure during liftoff is an added concern, as a flight so afflicted —especially with total power failure–would be over residential areas at low altitude. This renders problematic chances of safely returning to the airport, or avoiding homes, schools or businesses in the event of extreme aircraft distress and crash.

Response 10-2

Please refer to Response 8-3.

Comment 10-3

The May 2020 opportunity for community feedback on the General Plan update was announced by email, but took place only over single calendar week of seven days commencing at the beginning of and extending through a three-day holiday weekend! To so severely foreshorten public notice and comment was probably contrary to statutory requirements and was certainly not in the interest of full community involvement. Despite this foreshortening, 34 of 37 responding residents requested that the general plan revision encompass the noted noise and safety matters. This the airport brushed aside with the assertion that "noise is outside of the scope of the plan update," but would be reviewed in the subsequent environmental process." This promised review has not occurred aside from the inclusion of comments submitted during the Draft EIR review period (PC Attachment 3), and cursory remarks contained on Draft EIR page 9-5. To displace the entire onus of noise and safety onto Federal aviation authorities is a convenient excuse for inaction and a dismay for many living in Natomas.

Response 10-3

Please refer to Responses 8-2 and 8-5.

Comment 10-4

As previously predicted, compartmentalizing noise and safety by the airport and other county officials has guaranteed that at no single point of decision-making has such concerns be taken into account with respect to overall airport operations. From past experience Natomas residents know that activities within the scope of the general plan, especially changes in departure practices absent efforts to mitigate effects of same, can actually impact residents enormously. When recently a runway closure for upgrades resulted in a dramatic intensification of noise and risk, the airport made no known effort to solicit community input on mitigation steps to lessen such impacts. This amounts to walling off aspects of the airport beyond the basic scope of government decision-making. Closure of the west runway in 2019 is an example of the kinds of airfield adjustments included on page 7 of the PDF Master Plan presentation. However, the goal of safety maximization for residents adjacent to the airport did not appear among the construction planning goals stated on page 3 of the PDF General Plan presentation, nor was it addressed in the Safety topics of the Draft EIR. This is, however, a subject directly within the scope of the planning effort and its omission can be seen as negligence on the part of airport officials.

Response 10-4

Please refer to Response 8-3.

Comment 10-5

With respect to south-flow departures, the noise contours depicted on the compatibility map of the 2020 PDF General Plan presentation and the Draft EIR are misleading and unrepresentative of reality, while at the same time analytically relied upon throughout (as page 9-5 in effect admits). Air traffic actually bifurcates into two lobes, one southeast and the other directly east roughly along Del Paso Road. The responsible manner in which to approach this and other noted difficulties in the Draft EIR (PC attachment 3) is not to rely on misleading and outdated noise contours or questionable metrics, but rather to accurately ascertain the actual problems, environmental and otherwise, which have been identified by Natomas residents.

Response 10-5

Please refer to Response 8-4.

Comment 10-6

The discussion of airport associated air pollution fails to take into account the odors residents can experience both when aircraft are taking off and when passing overhead. In the case of north-flow departures, it is not unusual for southern West Natomas residents to be exposed to the odor of drifting fumes from aircraft propelled into nearby neighborhoods by a prevailing northerly breeze. Also, similar levels of noxious odor can drift down to those below from south-bound flights, especially when near-calm wind conditions prevail. This pollution is intense enough to force residents to minimize breathing or close up homes until fumes dissipate.

Response 10-6

Please refer to Response 8-6.

Comment 10-7

With respect to take off noise, the Draft EIR also fails to address the north-flow take-off engine noises which can be carried into residential Natomas by the wind. This problem is particularly noticeable when the East Runway is used for departures.

Response 10-7

Please refer to Response 8-7.

Comment 10-8

Also, anyone familiar with roads between West Natomas and the airport can attest to the degraded condition of Power Line road between Bayou and Del Paso. This stretch of roadway already suffers severe shoulder deterioration. Nevertheless, the Draft EIR fails to address this matter under the relevant topic.

Response 10-7

Please refer to Response 8-8.

Comment 10-8

Something has gone wrong in both the General Planning and CEQA compliance process in this instance. The Draft EIR acknowledges on pages 9-5 and 9-6 departure concentration changes which have affected West Natomas but makes no effort to identify the associated consequences, environmental or otherwise. Rather than full public involvement, the airport purposely truncated community participation in the General Planning process. Overall, despite significant progress in the discussion of a variety of other matters, the Draft EIR's other deficiencies are such as to constitute inadequacy from the standpoint of CEQA compliance. Ignoring and dismissing the identified matters for yet another decade will not make them disappear, nor will it improve public confidence in government's ability to be open and honest about decision-making or provide desirable safety margins.

Response 10-8

Please refer to Responses 8-2, 8-3, 8-4, and 8-5.

SACRAMENTO COUNTY

PLANNING AND ENVIRONMENTAL REVIEW

MITIGATION MONITORING AND REPORTING PROGRAM

CONTROL NUMBER: PLER2020-00037

NAME: Sacramento International Airport Master Plan Update

LOCATION: The Sacramento International Airport (SMF) is located approximately 10 miles northwest of downtown Sacramento. SMF is generally bounded by Power Line Road to the east, Garden Highway to the west, Interstate-5(I-5)/Sacramento River to the west and south, and West Elverta Road to the north.

ASSESSOR'S PARCEL NUMBER(S): Various

OWNER/APPLICANT: Sacramento County Department of Airports
6900 Airport Boulevard, Sacramento, CA 95837

PROJECT DESCRIPTION: The proposed project is the Sacramento International Airport (SMF) Master Plan Update. The Master Plan Update revises the existing program for modifications of existing facilities and development of new facilities at SMF through the year 2038. The Master Plan addresses all aspects of the airport including the airfield, terminals and related passenger services, cargo, general aviation (GA), airport support, airport access and commercial development.

The update largely consists of revisions to proposed airport projects and facilities based on revised aviation forecasts. The update looks at previously identified projects and projected growth at SMF. Many of the updates center on the timing of the project (planning phase) along with minor changes to locations and size of facilities. A direct comparison of the Master Plan and Master Plan Update (MPU) facilities and planning phasing are presented in Table PD-1 and MPU exhibits are presented in Plate PD-3 through 7; notable changes are highlighted below:

- Removal of the third runway and taxiway system;
- Relocating the economy parking lot from south of I-5 to north of I-5, east of Airport Boulevard;
- Changing the economy parking lot south of I-5 to commercial uses and moving it to PAL 4;
- Changing the location of Elkhorn Boulevard extension;
- Construction of a third Concourse (C), adjacent to Concourse B;
- Construction of new airline maintenance, rehabilitation and overall MRO facilities;

- Construction of a new consolidated rental car facility;
- Revising the acreage, location and phasing of commercial development proposed north of I-5, from 77 acres to approximately 189 acres;
- Move phasing of 135 acres of commercial development north of Elverta Road to PAL 3; and
- Movement of the new cargo building and apron from the southwest side to the north airfield, east of Runway 16R and increasing the size from 226 thousand square feet (kft^2) to 950kft^2.
    - The Cargo Facility is comprised of three buildings (sortation building, a ground crew building, and an equipment maintenance building), associated parking, and a taxilane on 192 acres on the north side of the airport (Plate PD-8). As shown on the conceptual plan, the three buildings would total 950,000 square feet, have 13 aircraft parking spaces, 1,314 parking spaces, and 343 trailer parking spaces. Access to the project site is provided on Earhart Drive from West Elverta Road. Intersection improvements for Earhart Drive and West Elverta Road, which include widening and signalization, are proposed as part of this project.

TYPE OF ENVIRONMENTAL DOCUMENT: Supplemental Environmental Impact Report (SEIR)

PREPARED BY: Sacramento County
Planning and Environmental Review
827 7th Street, Room 225
Sacramento, CA 95814

PHONE: (916) 874-6141

MITIGATION MONITORING AND REPORTING PROGRAM

ADOPTED BY: Sacramento County Board of Supervisors **DATE:**

ATTEST:___________________________________

SECRETARY/CLERK

TABLE OF MEASURES

PURPOSE AND PROCEDURES

Pursuant to Section 21081.6 of the Public Resources Code and Chapter 20.02 of the Sacramento County Code, a Mitigation Monitoring and Reporting Program has been established for the project entitled Sacramento International Airport Master Plan Update (Control Number: PLER2020-00037).

PURPOSE

The purpose of this program is to assure diligent and good faith compliance with the Mitigation Measures which have been recommended in the environmental document, and adopted as part of the project or made conditions of project approval, in order to avoid or mitigate potentially significant effects on the environment.

NOTIFICATION AND COMPLIANCE

It shall be the responsibility of the project applicant/owner to provide written notification to the Environmental Coordinator, in a timely manner, of the completion of each Mitigation Measure as identified on the following pages. The Environmental Coordinator will verify that the project is in compliance with the adopted Mitigation Monitoring and Reporting Program (MMRP). Any non-compliance will be reported to the project applicant/owner, and it shall be the project applicant's/owner's responsibility to rectify the situation by bringing the project into compliance and re-notifying the Environmental Coordinator. Any indication that the project is proceeding without good-faith compliance could result in the imposition of administrative, civil and/or criminal penalties upon the project applicant/owner in accordance with Chapter 20.02 of the Sacramento County Code.

PAYMENT

It shall be the responsibility of the project applicant to reimburse the Planning and Environmental Review Division for all expenses incurred in the implementation of the Mitigation Monitoring and Reporting Program (MMRP), including any necessary enforcement actions.

COMPLETION

Pursuant to Section 20.02.060 of the Sacramento County Code, upon the determination of the Environmental Coordinator that compliance with the terms of the approved Mitigation Monitoring and Reporting Program has been achieved, and that there has been full payment of all fees for the project, the Environmental Coordinator shall record and issue a Program Completion Certificate for the project.

STANDARD PROVISIONS

The project applicant shall submit one copy of all Project Plans and Construction Specifications and/or revisions to the Environmental Coordinator prior to Board approval to advertise Plans and Specifications. If the Environmental Coordinator determines that the Plans are not in full compliance with the adopted MMRP, the Plans shall be returned to the project applicant with a letter specifying the items of non-compliance, and instructing the applicant to revise the Plans, and then resubmit one copy of the revised Plans to the Environmental Coordinator prior to Board approval to advertise.

Additionally, the project applicant shall notify the Environmental Coordinator **no later than 48 hours** prior to the start of construction and no later than 24 hours after its completion. The applicant shall notify the Environmental Coordinator no later than 48 hours prior to any/all Final Inspection(s) by Sacramento County.

The project applicant shall notify the Environmental Coordinator of any pre-construction meetings. Upon notification, a determination will be made as to whether or not the Environmental Coordinator will need to attend the meeting.

The project applicant shall comply with the Mitigation Monitoring and Reporting Program for this project, including the payment of 100% of the Planning and Environmental Review Division staff costs, and the costs of any technical consultant services incurred during implementation of that Program.

☐ MITIGATION MEASURE AQ-1: CONSTRUCTION EMISSIONS

(Prior EIR Mitigation Measure AQ-1 and 2 Revised) All future construction projects which exceed the SMAQMD construction ozone precursor screening thresholds in effect at the time of project submittal shall include an ozone precursor analysis. If the analysis results indicate that the project will generate ozone precursors that exceed the current Sacramento Metropolitan Air Quality Management District thresholds, this mitigation shall apply. This mitigation may be modified if guidance from the Sacramento Metropolitan Air Quality Management District changes in the future.

a. The project applicant, or its designee, shall provide a plan for approval by the Sac Metro Air District that demonstrates the heavy-duty off-road vehicles (50 horsepower or more) to be used 8 hours or more during the construction project will achieve a project wide fleet-average 10% NOx reduction compared to the most recent California Air Resources Board (CARB) fleet average. The plan shall have two components: an initial report submitted before construction and a final report submitted at the completion. (Acceptable options for reducing emissions may include use of cleaner engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.)

b. Submit the initial report at least four (4) business days prior to construction activity using the Sac Metro Air District's Construction Mitigation Tool (http://www.airquality.org/businesses/ceqa-land-use-planning/mitigation).

c. Provide project information and construction company information.

d. Include the equipment type, horsepower rating, engine model year, projected hours of use, and the CARB equipment identification number for each piece of equipment in the plan. Incorporate all owned, leased and subcontracted equipment to be used.

e. Submit the final report at the end of the job, phase, or calendar year, as pre-arranged with Sac Metro Air District staff and documented in the approval letter, to demonstrate continued project compliance.

The SMAQMD may conduct periodic site inspections to determine compliance. Nothing in this mitigation shall supersede other air district, state or federal rules or regulations.

This mitigation will sunset on January 1, 2028, when full implementation of the CARB In Use Off-Road Regulation is expected.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ Date: ____________________

☐ MITIGATION MEASURE AQ-2: CONSTRUCTION EMISSIONS OFF-SET FEES

(Prior EIR Mitigation Measure AQ-4 Revised)To mitigate the additional construction emissions that cannot be offset through implementation of Mitigation Measure AQ-1, above, the following shall apply: Prior to construction activities, SCDA or the project proponent will submit proof that the off-site air quality mitigation fee has been paid to SMAQMD, and that the construction air quality mitigation plan has been approved by SMAQMD and the Environmental Coordinator. The fee will be calculated based on the most current SMAQMD recommended methodology and fee rate available at the time of ground disturbance.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ Date: ____________________

☐ Mitigation Measure AQ-3: Particulate Matter

(Prior EIR Mitigation Measure AQ-5 Revised) The following mitigation measures will be incorporated into the project to minimize the generation of PM_{10} dust during dry construction conditions:

a. Enclose, cover, or water twice daily all soil piles.

b. Water exposed soil with adequate frequency for continued moist soil.

c. Water all haul roads twice daily.

d. Cover loads of all haul/dump truck securely.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ Date: ____________________

☐ Mitigation Measure AQ-4: Loading Docks

All projects which include loading docks, including the proposed cargo facility, shall ensure, through sale or leasing agreements, that the haul fleet consist of trucks that at a minimum meet the emissions standards of a 2010 vehicle model, and as trucks are replaced they are replaced with the newest available model. Annual reporting shall be provided to the Sacramento County Department of Airports. To ensure compliance of hired third-party fleets serving the facility, it is recommended that a Truck and Bus CARB Certificate is verified for each fleet. In addition, the project shall include electrical hookups at all loading bays, and electric vehicle charging stations and/or infrastructure (e.g., conduit and panel space) to support future installation of truck charging stations for future zero-emission heavy-duty vehicles.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: _____________________

☐ MITIGATION MEASURE AQ-5: AIR QUALITY MITIGATION PLAN

An Air Quality Mitigation Plan (AQMP) obtaining 15 percent or more reduction in mobile source ozone precursors shall be prepared by the Sacramento County Department of Airports. The AQMP shall be reviewed by the SMAQMD and approved by the Environmental Coordinator prior to issuance of occupancy permits of the first project or element under the Master Plan Update.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ Date: ____________________

☐ Mitigation Measure AQ-6: Transportation Demand Management Program

Transportation Demand Management Program (TDM) shall be prepared by Sacramento County Department of Airports. The TDM shall be reviewed by the SMAQMD and approved by the Environmental Coordinator prior to issuance of occupancy permits of the first project or element under the Master Plan Update. The TDM program must detail strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips through alternative forms of transportation which may include: walking (internal to SMF), bicycling, carpool and transit. The TDM program shall include, but is not limited to, the following:

a. Provide transportation information center and on-site TDM coordinator/program manager to educate employers, employees, and visitors of surrounding transportation options and ensure implementation;

b. Ensure that there is a permanent funding mechanism to support the program (CSD-1 or similar).

c. Promote bicycling and/or walking through design features. Examples may include showers for employees, self-service bicycle repair area, etc. around the project site or other methods.

d. Promote and support carpool use through parking incentives and administrative support. Examples may include ride-matching service or other methods.

e. Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated parking spaces for carpool users.

f. TDM coordinator/program manager is responsible for preparing an annual report to the Environmental Coordinator.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ Date: ____________________

☐ MITIGATION MEASURE AQ-7: LOW VOC PAINTS

Future development projects under the Airport Master Plan Update shall use low VOC content paints that exceed the regulatory VOC limits put forth by SMAQMD's Rule 442. Low VOC paints shall be no more than 10 grams per liter (g/L) of VOC. Alternatively, pre-painted material that do not require the use of architectural coating may be utilized. The contractor shall submit to the Sacramento County Department of Airports a schedule of all paint to be used to demonstrate compliance with this measure. Sacramento County Department of Airports shall communicate annually with facilities management and tenants regarding this requirement beyond the initial application of coatings.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ Date: ____________________

☐ Mitigation Measure BR-1: Wetlands and Waters of the U.S.

In order to reduce impacts to wetland habitat the applicant shall comply with one or a combination of the following prior to every project which involves wetlands or waters of the U.S. or State:

- Where a Section 404 Permit has been issued by the U.S. Army Corps of Engineers, or an application has been made to obtain a Section 404 Permit, the Mitigation and Management Plan required by that permit or proposed to satisfy the requirements of the USACE for granting a permit may be submitted for purposes of achieving a no net-loss of wetlands. The required Plan shall be submitted to the Sacramento County Environmental Coordinator, U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service for approval prior to its implementation.

- If regulatory permitting processes result in less than a 1:1 compensation ratio for loss of wetlands, the project applicant shall demonstrate that the wetlands which went unmitigated/uncompensated as a result of permitting have been mitigated through other means. Acceptable methods include payment into a mitigation bank or protection of off-site wetlands through the establishment of a permanent conservation easement, subject to the approval of the Environmental Coordinator.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ Date: ____________________

☐ MITIGATION MEASURE BR-2: NESTING SWAINSON'S HAWKS

Initiation of ground disturbance (clearing and grubbing, grading, or construction) for any proposed construction project shall be conducted between September 15 and March 1. If new disturbance must be conducted during the nesting season, March 1 to September 15, a focused survey for Swainson's hawk nests on the site and within ½ mile of the site shall be conducted by a qualified biologist in accordance with the Swainson's Hawk Survey Protocol outlined in the Swainson's Hawk Technical Advisory Committee 2000 paper. Note that multiple surveys may be required depending on the timing of the surveys. If active nests are found, a qualified biologist shall be retained to prepare a site-specific take avoidance plan that proposes measures to comply with the California Endangered Species Act and the Fish and Game Code, and these measures shall be implemented prior to the start of any ground-disturbing activities. Measures may include but are not limited to nest-specific no disturbance buffers, biological monitoring, rescheduling project activities around sensitive periods for the species (e.g. nest establishment), or implementation of construction best practice such as staging equipment out of the species' line of sight from the nest tree. In the event take of Swainson's hawk cannot be avoided, the project proponent may seek related take authorization as provided by Fish and Game Code. If no active nests are found during the focused survey, no further mitigation will be required.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ Date: ________________

☐ Mitigation Measure BR-3: Swainson's Hawk Foraging Habitat

Prior to any development north of Elverta Road as shown in PAL 3, such as clearing or grubbing, the issuance of any permits for grading, building, or other site improvements, implement one of the following options to mitigate for the loss of up to 135 acres of Swainson's hawk foraging habitat on the project site:

a. The project proponent shall utilize one or more of the mitigation options (land dedication and/or fee payment) established in Sacramento County's Swainson's Hawk Impact Mitigation Program (Chapter 16.130 of the Sacramento County Code).

b. The project proponent shall, to the satisfaction of the California Department of Fish and Wildlife, prepare and implement a Swainson's hawk mitigation plan that will include preservation of Swainson's hawk foraging habitat.

c. The project proponent may transfer the mitigation acres allocated for the proposed development south of I-5 through the 2007 Mitigation Measure BR-11 to PAL 3 developments north of Elverta Road.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ **Date:** _____________________

☐ Mitigation Measure BR-4: Nesting Raptors

If construction activity (which includes clearing, grubbing, or grading) is to commence within 500 feet of suitable nesting habitat between February 1 and September 15, a survey for raptor nests shall be conducted by a qualified biologist. The survey shall cover all potential tree, ground, or manmade (e.g. utility poles) suitable nesting habitat on-site and off-site up to a distance of 500 feet from the project boundary. The survey shall occur within 15 days of the date that project activities will encroach within 500 feet of suitable habitat. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity. If no active nests are found during the survey, no further mitigation will be required.

If any active nests are found, the Environmental Coordinator and a site-specific take avoidance plan that purposes measures to comply with the Fish and Game Code shall be prepared in consultation with a qualified biologist. The avoidance/protective measures shall be implemented prior to the commencement of construction within 500 feet of an identified nest. Measures may include but are not limited to nest-specific no disturbance buffers, biological monitoring, rescheduling project activities around sensitive periods for the species (e.g. nest establishment), or implementation of construction best practice such as staging equipment out of the species' line of sight from the nest tree. If a lapse in project-related work of 15 days or longer occurs, the qualified biologist shall perform a new focused survey, and if nests are found, perform the tasks described in this measure.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ______________________________ **Date:** ____________________

☐ Mitigation Measure BR-5: Burrowing Owl

Prior to ground disturbance (which includes clearing, grubbing, or grading) within 500 feet of suitable burrow habitat, a survey for burrowing owl shall be conducted by a qualified biologist. The survey shall occur within 30 days of the date that construction will encroach within 500 feet of suitable habitat. Surveys shall be conducted in accordance with the following:

1. A survey for occupied burrows and owls should be conducted by walking through suitable habitat over the area to be disturbed and in areas within 150 meters (~500 feet) of the project impact zone.
2. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (~100 feet), and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To efficiently survey projects larger than 100 acres, it is recommended that two or more surveyors conduct concurrent surveys. Surveyors should maintain a minimum distance of 50 meters (~160 feet) from any owls or occupied burrows. It is important to minimize disturbance near occupied burrows during all seasons.
3. If no occupied burrows or burrowing owls are found in the survey area, a letter report documenting survey methods and findings shall be submitted to the Environmental Coordinator and no further mitigation is necessary.
4. If occupied burrows or burrowing owls are found, then a complete burrowing owl survey is required. This consists of a minimum of four site visits conducted on four separate days, which must also be consistent with the Survey Method, Weather Conditions, and Time of Day sections of Appendix D of the California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012). Submit a survey report to the Environmental Coordinator which is consistent with the Survey Report section of Appendix D of the California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012).
5. If occupied burrows or burrowing owls are found the applicant shall contact the Environmental Coordinator and confer with California Fish and Wildlife prior to construction, and will be required to submit a Burrowing Owl Mitigation Plan (subject to the approval of the Environmental Coordinator and in consultation with California Fish and Wildlife). This plan must document all proposed measures, including avoidance, minimization, exclusion, relocation, or other measures, and include a plan to monitor mitigation success. The California Fish and Wildlife "Staff Report on Burrowing Owl Mitigation" (March 2012) shall be followed in the development of the mitigation plan.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: ____________________

☐ Mitigation Measure BR-6: Tricolored Blackbirds

If construction activity (which includes clearing, grubbing, or grading) is to commence within 300 feet of suitable tricolored blackbird nesting habitat between March 1 and July 31, a survey for nesting tricolored blackbirds shall be conducted by a qualified biologist. The survey shall cover all potential nesting habitat on-site and off-site up to a distance of 300 feet from the project boundary. The survey shall occur within 30 days of the date that construction will encroach within 300 feet of suitable habitat. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity. If no tricolored blackbird were found during the pre-construction survey, no further mitigation would be required. If an active tricolored blackbird colony is found on-site or within 300 feet of the project site the project proponent shall do the following:

1. Consult with the California Department of Fish and Wildlife to determine if project activity will impact the tricolored blackbird colony(s). Provide the Environmental Coordinator with written evidence of the consultation or a contact name and number from the California Department of Fish and Wildlife. Implement all protective measures recommended by the California Department of Fish and Wildlife.

2. With the California Department of Fish and Wildlife permission, the applicant may avoid impacts to tricolored blackbird by establishing a 300-foot temporary setback, with fencing that prevents any project activity within 300 feet of the colony. A qualified biologist shall verify that setbacks and fencing are adequate and will determine when the colonies are no longer dependent on the nesting habitat (i.e. nestling have fledged and are no longer using habitat). The breeding season typically ends in July.

3. If tricolored blackbird habitat is permanently destroyed follow the California Department of Fish and Wildlife procedure to mitigate for habitat loss, and submit documentation of the mitigation to the Environmental Coordinator.

<u>Implementation and Notification (Action by Project Applicant):</u>

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

<u>Verification (Action by the Environmental Coordinator):</u>

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ **Date:** ____________________

☐ Mitigation Measure BR-7: Giant Garter Snake

Prior to construction activities within 200 feet of the appropriate habitat on the project site, the applicant shall consult with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife regarding the giant garter snake and shall obtain any required permits. Unless otherwise indicated by permits or other documentation provided by the U.S. Fish and Wildlife Service, provide mitigation and protective measures consistent with those published in the Programmatic Consultation for the species ("Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California". 1-1-F-97-149. November 13, 1997.). Confine any ground disturbing activity (i.e. clearing, grubbing, grading, and excavation) in giant garter snake habitat to May 1st to October 1st (which is the snake's active period).

At a minimum the following avoidance and minimization measures shall be implemented;

- Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the USFWS's Sacramento office to determine if additional measures are necessary to minimize and avoid take.
- Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as Environmentally Sensitive Areas. This area should be avoided by all construction personnel.
- Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).
- 24-hours prior to construction activities, the project area should be surveyed for giant garter snakes. Survey of the project area should be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the USFWS.
- Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ **Date:** ____________________

☐ Mitigation Measure BR-8: Western Pond Turtles

To avoid impacts to western pond turtles the following shall apply:

1. Twenty four hours prior to the commencement of ground-disturbing activity (i.e. clearing, grubbing, or grading) suitable habitat within the project area shall be surveyed for western pond turtle by a qualified biologist. The survey shall include aquatic habitat and 1,650 feet of adjacent uplands surrounding aquatic habitat within the project area. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Environmental Coordinator prior to ground disturbing activity.
2. Construction personnel shall receive worker environmental awareness training. This training instructs workers how to recognize western pond turtles and their habitat.
3. If a western pond turtle is encountered during active construction, all construction shall cease until the animal has moved out of the construction area on its own or relocated by a qualified biologist. If the animal is injured or trapped, a qualified biologist shall move the animal out of the construction area and into a suitable habitat area. California Fish and Wildlife and the Environmental Coordinator shall be notified within 24-hours that a turtle was encountered.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: ____________________

☐ Mitigation Measure BR-9: Nesting Migratory Birds

To Avoid impacts to nesting migratory birds the following shall apply:

1. If construction activity (which includes clearing, grubbing, or grading) is to commence within 50 feet of nesting habitat between February 1 and August 31, a survey for active migratory bird nests shall be conducted no more than 14 days prior to construction by a qualified biologist.
2. Trees slated for removal shall be removed during the period of September through January, in order to avoid the nesting season. Any trees that are to be removed during the nesting season, which is February through August, shall be surveyed by a qualified biologist and will only be removed if no nesting migratory birds are found.
3. If active nest(s) are found in the survey area, a non-disturbance buffer, the size of which has been determined by a qualified biologist, shall be established and maintained around the nest to prevent nest failure. All construction activities shall be avoided within this buffer area until a qualified biologist determines that nestlings have fledged, or until September 1.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ **Date:** ____________________

☐ Mitigation Measure BR-10: Native Tree Compensation

Prior to project approval of Elverta Road Improvements associated with the cargo facility (PAL 1) and the commercial development north of Elverta Road (PAL 3), a tree inventory shall be completed which includes all native trees over six (6) inches in diameter at breast height must be inventoried including species, size, dripline radius, health condition within the proposed areas of impact. The removal of native trees shall be compensated for by planting in-kind native trees equivalent to the dbh inches lost, based on the ratios listed below, at locations that are authorized by the Environmental Coordinator. On-site preservation of native trees that are less than 6 inches (<6 inches) dbh, may also be used to meet this compensation requirement. Native trees include: valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), blue oak (*Quercus douglasii*), or oracle oak (*Quercus morehus*), California sycamore (*Platanus racemosa*), California black walnut (*Juglans californica*, which is also a List 1B plant), Oregon ash (*Fraxinus latifolia*), western redbud (*Cercis occidentalis),* gray pine (*Pinus sabiniana*), California white alder (*Alnus rhombifolia*), boxelder (*Acer negundo*), California buckeye (*Aesculus californica*), narrowleaf willow (*Salix exigua*), Gooding's willow (*Salix gooddingii*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), shining willow (*Salix lucida*), Pacific willow (*Salix lasiandra*), and dusky willow (*Salix melanopsis*).

Replacement tree planting shall be completed prior to approval of grading or improvement plans, whichever comes first.

Equivalent compensation based on the following ratio is required:

- one preserved native tree < 6 inches dbh on-site = 1 inch dbh
- one D-pot seedling (40 cubic inches or larger) = 1 inch dbh
- one 15-gallon tree = 1 inch dbh
- one 24-inch box tree = 2 inches dbh
- one 36-inch box tree = 3 inches dbh

Prior to the approval of Improvement Plans or Building Permits, whichever occurs first, a Replacement Tree Planting Plan shall be prepared by a certified arborist or licensed landscape architect and shall be submitted to the Environmental Coordinator for approval. The Replacement Tree Planting Plan(s) shall include the following minimum elements:

1. Species, size and locations of all replacement plantings and < 6-inch dbh trees to be preserved
2. Method of irrigation
3. If planting in soils with a hardpan/duripan or claypan layer, include the Sacramento County Standard Tree Planting Detail L-1, including the 10-foot deep boring hole to provide for adequate drainage

4. Planting, irrigation, and maintenance schedules;
5. Identification of the maintenance entity and a written agreement with that entity to provide care and irrigation of the trees for a 3-year establishment period, and to replace any of the replacement trees which do not survive during that period.
6. Designation of 20-foot root zone radius and landscaping to occur within the radius of trees < 6 inches dbh to be preserved on-site.

No replacement tree shall be planted within 15 feet of the driplines of existing native trees or landmark size trees that are retained on-site, or within 15 feet of a building foundation. The minimum spacing for replacement native trees shall be 20 feet on-center. Examples of acceptable planting locations are publicly owned lands, common areas, and landscaped frontages (with adequate spacing). Generally unacceptable locations are utility easements (PUE, sewer, storm drains), under overhead utility lines, private yards of single-family lots (including front yards), and roadway medians.

Native trees <6 inches dbh to be retained on-site shall have at least a 20-foot radius suitable root zone. The suitable root zone shall not have impermeable surfaces, turf/lawn, dense plantings, soil compaction, drainage conditions that create ponding (in the case of oak trees), utility easements, or other overstory tree(s) within 20 feet of the tree to be preserved. Trees to be retained shall be determined to be healthy and structurally sound for future growth, by an ISA Certified Arborist subject to Environmental Coordinator approval.

If tree replacement plantings are demonstrated to the satisfaction of the Environmental Coordinator to be infeasible for any or all trees removed, then compensation shall be through payment into the County Tree Preservation Fund. Payment shall be made at a rate of $325.00 per dbh inch removed but not otherwise compensated, or at the prevailing rate at the time payment into the fund is made.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ **Date:** ____________________

☐ Mitigation Measure BR-11: Native Tree Protection

For the purpose of this mitigation measure, a native tree is defined as a those listed in Mitigation Measure BR-10 having a diameter at breast height (dbh) of at least 6 inches, or if it has multiple trunks of less than 6 inches each, a combined dbh of at least 10 inches.

With the exception of the trees removed and compensated for through Mitigation Measure BR-10, above, all native trees on the project site, all portions of adjacent off-site native trees which have driplines that extend onto the project site, and all off-site native trees which may be impacted by utility installation and/or improvements associated with this project, shall be preserved and protected as follows:

1. A circle with a radius measurement from the trunk of the tree to the tip of its longest limb shall constitute the dripline protection area of the tree. Limbs must not be cut back in order to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area of the tree. Removing limbs which make up the dripline does not change the protected area.
2. Chain link fencing or a similar protective barrier shall be installed one foot outside the driplines of the native trees prior to initiating project construction, in order to avoid damage to the trees and their root system.
3. No signs, ropes, cables (except cables which may be installed by a certified arborist to provide limb support) or any other items shall be attached to the native trees.
4. No vehicles, construction equipment, mobile home/office, supplies, materials or facilities shall be driven, parked, stockpiled or located within the driplines of the native trees.
5. Any soil disturbance (scraping, grading, trenching, and excavation) is to be avoided within the driplines of the native trees. Where this is necessary, an ISA Certified Arborist will provide specifications for this work, including methods for root pruning, backfill specifications and irrigation management guidelines.
6. All underground utilities and drain or irrigation lines shall be routed outside the driplines of native trees. Trenching within protected tree driplines is not permitted. If utility or irrigation lines must encroach upon the dripline, they should be tunneled or bored under the tree under the supervision of an ISA Certified Arborist.
7. If temporary haul or access roads must pass within the driplines of oak trees, a roadbed of six inches of mulch or gravel shall be created to protect the root zone. The roadbed shall be installed from outside of the dripline and while the soil is in a dry condition, if possible. The roadbed material shall be replenished as necessary to maintain a six-inch depth.

8. Drainage patterns on the site shall not be modified so that water collects or stands within, or is diverted across, the dripline of oak trees.
9. No sprinkler or irrigation system shall be installed in such a manner that it sprays water within the driplines of the oak trees.
10. Tree pruning that may be required for clearance during construction must be performed by an ISA Certified Arborist or Tree Worker and in accordance with the American National Standards Institute (ANSI) A300 pruning standards and the International Society of Arboriculture (ISA) "Tree Pruning Guidelines".
11. Landscaping beneath the oak trees may include non-plant materials such as boulders, decorative rock, wood chips, organic mulch, non-compacted decomposed granite, etc. Landscape materials shall be kept two (2) feet away from the base of the trunk. The only plant species which shall be planted within the driplines of the oak trees are those which are tolerant of the natural semi-arid environs of the trees. Limited drip irrigation approximately twice per summer is recommended for the understory plants.
12. Any fence/wall that will encroach into the dripline protection area of any protected tree shall be constructed using grade beam wall panels and posts or piers set no closer than 10 feet on center. Posts or piers shall be spaced in such a manner as to maximize the separation between the tree trunks and the posts or piers in order to reduce impacts to the trees.
13. or a project constructing during the months of June, July, August, and September, deep water trees by using a soaker hose (or a garden hose set to a trickle) that slowly applies water to the soil until water has penetrated at least one foot in depth. Sprinklers may be used to water deeply by watering until water begins to run off, then waiting at least an hour or two to resume watering (provided that the sprinkler is not wetting the tree's trunk. Deep water every 2 weeks and suspend watering 2 weeks between rain events of 1inch or more.

<u>Implementation and Notification (Action by Project Applicant):</u>

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

<u>Verification (Action by the Environmental Coordinator):</u>

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ **Date:** ____________________

☐ MITIGATION MEASURE CC-1: GHG EMISSIONS

All future development projects under the SMF Master Plan Update shall demonstrate compliance with SMAQMD Tier 1 BMPs (required for all projects) and Tier 2 BMPs (Mitigation Measures AQ-6 through AQ-7). Upon adoption of the Sacramento County Communitywide Climate Action Plan (CAP) and CAP Checklist, future SMF Master Plan Development projects shall demonstrate consistency with and adopt applicable CAP Checklist measures.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: _____________________

☐ MITIGATION MEASURE CC-2: CONSTRUCTION GHG EMISSIONS

All future development projects under the SMF Master Plan Update should incorporate, to the extent feasible, the following SMAQMD Guidance for Construction GHG Emissions Reductions (Best Management Practices):

a. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3 minutes (5 minute limit is required by the State airborne toxics control measure).
b. Maintain construction equipment in proper working condition according to the manufacturer's specifications.
c. Use the proper size of equipment for the job.
d. Use equipment with new technologies (repowered engines, electric drive trains).
e. Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).
f. Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power.
g. Use ARB approved low carbon fuel for construction equipment. (*NOx emissions from the use of low carbon fuels must be determined and any increase mitigated*)

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: ____________________

☐ MITIGATION MEASURE CR-1: CULTURAL RESOURCES

In the event that human remains are discovered in any location other than a dedicated cemetery, work shall be halted and the County Coroner contacted. For all other unexpected cultural resources discovered during project construction, work shall be halted until a qualified archaeologist may evaluate the resource encountered.

1. **Unanticipated human remains**. Pursuant to Sections 5097.97 and 5097.98 of the State Public Resources Code, and Section 7050.5 of the State Health and Safety Code, if a human bone or bone of unknown origin is found during construction, all work is to stop and the County Coroner and the Office of Planning and Environmental Review shall be immediately notified. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission within 24 hours, and the Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent from the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposition of, with appropriate dignity, the human remains and any associated grave goods.

2. **Unanticipated cultural resources**. In the event of an inadvertent discovery of cultural resources (excluding human remains) during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained at the Applicant's expense to evaluate the significance of the find. If it is determined due to the types of deposits discovered that a Native American monitor is required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites as established by the Native American Heritage Commission shall be followed, and the monitor shall be retained at the Applicant's expense.

   a. Work cannot continue within the 100-foot radius of the discovery site until the archaeologist and/or tribal monitor conducts sufficient research and data collection to make a determination that the resource is either 1) not cultural in origin; or 2) not potentially eligible for listing on the National Register of Historic Places or California Register of Historical Resources.

   b. If a potentially-eligible resource is encountered, then the archaeologist and/or tribal monitor, Planning and Environmental Review staff, and project proponent shall arrange for either 1) total avoidance of the resource, if possible; or 2) test excavations or total data recovery as mitigation. The determination shall be formally documented in writing and submitted to the County Environmental Coordinator as verification that the provisions of CEQA for managing unanticipated discoveries have been met.

3. **Tribal cultural resources worker awareness.** The appended Tribal Cultural Resources (TCRs) Awareness Brochure, provides a definition and examples of TCRs that may be encountered during construction. The brochure was developed to assist construction teams with the identification and protection of TCRs. The brochure shall be shared with construction teams prior to ground disturbance.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ **Date:** ____________________

☐ MITIGATION MEASURE CR-2: TRIBAL MONITORING

Prior to initiation of ground disturbance, the Sacramento County Department of Airports, or contractor, shall contact the United Auburn Indian Community and the Wilton Rancheria to determine if a Tribal Monitor is required at least two weeks prior to ground disturbance. Provide a copy of Tribal correspondence to the Environmental Coordinator. If a Tribal Monitor is required the following measures are necessary:

a. A compensated (paid) Tribal Monitor from a traditionally and culturally affiliated Native American Tribe shall be retained to monitor specified ground disturbing project related activities.

b. The duration of the monitoring and construction schedule shall be determined at this time.

c. The Tribal Monitor will identify areas requiring monitoring in the project area during vegetation grubbing, stripping, grading or other ground-disturbing activities. All field monitoring activities will be logged by the Tribal Monitor.

d. The Tribal Monitor shall wear the appropriate safety equipment and shall have the necessary background training in construction safety protocols.

e. Tribal Monitors or Tribal Representatives have the authority to request that work be temporarily stopped, diverted, or slowed within 100 feet of the direct impact area if sites or objects of significance are identified. Only a Tribal Monitor or Representative from a culturally affiliated tribe can recommend appropriate treatment and final disposition of Tribal Cultural Resources.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: _____________________

☐ MITIGATION MEASURE LU-1: CONVERSION OF FARMLAND

Prior to conversion of approximately 100 acres of Farmland of Local Importance north of Elverta Road, an equal amount of land must be set aside with permanent farmland conservation easement.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: ____________________

☐ Mitigation Measure TC-1: Cargo Facility VMT Reduction

The following measures shall be implemented by the Cargo Facility proponent to reduce employee VMT:

Prior to issuance of occupancy permits, project operator(s) shall participate in the Airport-wide Transportation Demand Management (TDM) program (as outlined in mitigation measure AQ-6) which details strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips by walking, bicycle, carpool, and transit.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: __________________________________ Date: ______________________

☐ MITIGATION MEASURE TC-2: ELVERTA ROAD IMPROVEMENTS

Elverta Road Improvements (Earhart Road to Power Line Road)

Prior to issuance of occupancy permit for the Cargo Facility, install roadway improvements along this segment of Elverta Road to County standards of 12-foot vehicle lanes with 6-foot paved shoulders, or to the satisfaction of the Sacramento County Department of Transportation.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: ____________________

☐ MITIGATION MEASURE TC-3: ELVERTA ROAD IMPROVEMENTS

Elverta Road Improvements (Power Line Road to State Route 99)

If required by the County of Sacramento Department of Transportation, prior to issuance of occupancy permit for the Cargo Facility, install roadway improvements along this segment of Elverta Road to County standards of 12-foot vehicle lanes with 6-foot paved shoulders, or to the satisfaction of the Sacramento County Department of Transportation.

OR

Pay fair share, as determined by the County of Sacramento Department of Transportation, for this segment of Elverta Road widening.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.

2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.

2. Monitor compliance during periodic site inspections of the construction work.

3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ **Date:** ____________________

☐ MITIGATION MEASURE TC-4: AIRPORT BOULEVARD / I-5 RAMP

The southbound Airport Boulevard off-ramp shall be monitored as each PAL is completed (PAL 1- 7.3 million enplaned passengers, PAL 2- 8.2 million enplaned passengers, PAL 3- 9.2 million enplaned passengers). If the queue length begins to impede the mainline, the Department of Airports shall install intersection improvements in consultation with Sacramento County Department of Transportation and Caltrans. Improvements could consist of signalization or roundabout, or other measures deemed appropriate by Sacramento County Department of Transportation and Caltrans.

Implementation and Notification (Action by Project Applicant):

1. Comply fully with the above measure.
2. Include the above measure verbatim as a Construction Note and incorporate it into all Plans and Specifications for the project, and submit one copy to the Environmental Coordinator for review and approval prior to the start of any construction work (including clearing and grubbing).

Verification (Action by the Environmental Coordinator):

1. Review the Project Plans prior to the start of construction. Approve Project Plans that are determined to be in compliance with all required mitigation.
2. Monitor compliance during periodic site inspections of the construction work.
3. Participate in any Final Inspection(s) as necessary.

Comments:

Completion of Mitigation Verified:

Signature: ________________________________ Date: _____________________

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LIST OF ACRONYMS

AAQS	Ambient Air Quality Standards
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
AOA	Airport Operation Area
ARB	California Air Resources Board
ARFF	Airport Rescue and Fire Fighting
BCECP	Basic Construction Emission Control Practices
BMPs	Best Management Practices
CalEEMod	California Emissions Estimator Model
Cal EPA	California Environmental Protection Agency
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Uniform Building Code
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CDHP	California Department of Public Health
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
dB	Decibel
DOC	California Department of Conservation
DTSC	State Department of Toxic Substances Control
DWMR	Sacramento County Waste Management and Recycling Department
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EMD	Sacramento County Environmental Management Department
EMFAC	Emissions Factor Model
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FMMP	State Farmland Mapping and Monitoring

	Program
GHG	Greenhouse Gas
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
ICLEI	Local Governments for Sustainability
JFP	Folsom Joint Federal Project
KSF	Thousand Square Feet
LOS	Level of Service
MBTA	Migratory Bird Treaty Act
MGD	Million Gallons per Day
MPO	Metropolitan Planning Organization
NAHC	Native American Heritage Commission
NBHCP	Natomas Basin Habitat Conservation Plan
NOA	Naturally Occurring Asbestos
NPDES	National Pollutant Discharge Elimination System Permit
OPR	Office of Planning and Research
PAL	Planning Activity Level
PER	Office of Planning and Environmental Review
PG&E	Pacific Gas and Electric Company
PM	Particulate Matter
Regional Water Board	Central Valley Regional Water Quality Control Board
RD 1000	Reclamation District 1000
ROG	Reactive Organic Gasses
SACOG	Sacramento Area Council of Governments
SCC	Sacramento County Code
SCDA	Sacramento County Department of Airports
SCWA	Sacramento County Water Agency
SAFCA	Sacramento Area Flood Control Agency
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality District
SMF	Sacramento International Airport
SMUD	Sacramento Municipal Utility District
SNFA	Sacramento Federal Nonattainment Area
SRCSD	Sacramento Regional County Sanitation District
SWA	Solid Waste Authority
SWRCB	California State Water Resources Control Board
SWPPP	Stormwater Pollution Prevention Plan
TAC	Toxic Air Contaminants

TAZ	Traffic Analysis Zones
TDM	Traffic Demand Model
ULOP	Urban Level of Protection
USB	Urban Services Boundary
USBR	U.S. Bureau of Reclamation
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Gasses
WDID	Waste Dischargers Identification Number

AQ-1

Air Quality Assessment

Air Quality Assessment
SMF Cargo Facility Project and Master Plan Update
Sacramento County, California

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EXHIBITS

APPENDICES

LIST OF ABBREVIATED TERMS

AQMP	air quality management plan
AB	Assembly Bill
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAAQS	California Ambient Air Quality Standards
CCAA	California Clean Air Act
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
CO	carbon monoxide
DPM	diesel particulate matter
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
H_2S	hydrogen sulfide
Pb	lead
$\mu g/m^3$	micrograms per cubic meter
mg/m^3	milligrams per cubic meter
MTP/SCS	Metropolitan Transportation Plan/Sustainable Communities Strategy
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
O_3	ozone
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
ROG	reactive organic gases
RS	Resignation Substitution
SACOG	Sacramento Area Council of Governments
SFNA	Sacramento Federal Nonattainment Area
SMAQMD	Sacramento Metropolitan Air Quality Management District
SVAB	Sacramento Valley Air Basin
SJC	San Jose International Airport
SB	Senate Bill
sf	square foot
SIP	State Implementation Plan
SO_{4-2}	sulfates
SO_2	sulfur dioxide
TAC	toxic air contaminant
C_2H_3Cl	vinyl chloride
VOC	volatile organic compound

1 INTRODUCTION

This report documents the results of an Air Quality Assessment completed for the Sacramento International Airport Cargo Facility Project (Project) as part of the 2020 Sacramento Airport Master Plan Update. This analysis has been undertaken to analyze whether the proposed Project would result in significant environmental impacts. The purpose of this Air Quality Assessment is to document whether any air quality-related impacts would occur based on the proposed Project described below pursuant to State California Environmental Quality Act (CEQA).

1.1 Background

Sacramento International Airport Master Plan EIR – 2007

The Sacramento International Airport (SMF) Master Plan lays out the expected development of the airport to the year 2020. In 2007, the Sacramento International Airport Master Plan EIR was prepared to evaluate the environmental impacts that may result from implementing the SMF Master Plan and presents conclusions on the significance of those impacts. The *Sacramento International Airport Master Plan Final EIR* (2007) (SMF FEIR) addressed future development of the airport to the year 2020 in two phases. The first phase (Phase I) would occur from 2007 through 2013 and the second phase (Phase II) would occur from 2014 through 2020. The proposed Project is planned for the second phase of the Master Plan to expand its apron and construct three air cargo buildings. The Master Plan had also included conceptual plans for possible development at SMF in a third phase occurring beyond 2020. The Federal Aviation Administration recommends an airport master plan be updated every ten years, or when there is a large-scale shift proposed to airside or landside facilities. Currently, the SMF is preparing an update to the Master Plan as a continuation effort started by the Airport in 2016.

1.2 Project Location

The SMF is located west of the City of Sacramento and east of the Sacramento River, in Sacramento County. The airport is bordered by Interstate 5 (I-5) to the south and Power Line Road to the east. The Project site is located at SMF on the north side of the airport. The Project site is currently vacant with annual grassland and is bounded by West Elverta Road to the north, Earheart Drive to the east, Delta Road to the south, and an aircraft taxiway to the west. The 77.7-acre site is located approximately two mile north of the I-5 and three miles west of the State Route (SR) 99; refer to **Exhibit 1: Regional Location Map** and **Exhibit 2: Project Vicinity Map**.

1.3 Project Description

The Project is proposing to construct a cargo facility comprised of three buildings (e.g. a sortation building, a ground crew building, and an equipment maintenance building), associated parking, and a taxilane on the north side of the Sacramento International Airport on 77.7 acres. As shown in the **Exhibit 3: Conceptual Site Plan**, the cargo facility would include three buildings for a total of 950,000 square feet, 13 aircraft parking spaces, 1,314 automobile parking spaces, and 343 trailer parking spaces. Vehicular access to the project site would be provided on Earheart Drive from West Elverta Road. Access to the project site from Earheart Drive and West Elverta Road is proposed to be signalized.

Cargo Facility

The proposed Project consists of three buildings for a total of 950,000 square feet; refer to **Table 1: Building Summary**. The sortation building would include 900,000 square feet of warehouse area. The ground crew building would include 25,000 square feet of warehouse area. The maintenance building would include 25,000 square feet of warehouse area.

Table 1: Building Summary

Building	Total Building (sf)	Parking	
		Automobiles	Truck/Trailer
Sortation	900,000	1,314	343 trailer 141 truck
Ground Crew	25,000		
Maintenance	25,000		
Total	**950,000**		

Site Access

Vehicular access to the project site would be provided on two driveways on Earheart Drive. Vehicles would enter Earheart Drive from the northernmost entrance and exit the project site from the southernmost entrance. Access to the project site from Earheart Drive would be right-in the northernmost entrance and a left-out in the southernmost exit. The driveway entrance and exits would be unsignalized. Access to the project site from Earheart Drive and West Elverta Road is proposed to be signalized.

Parking

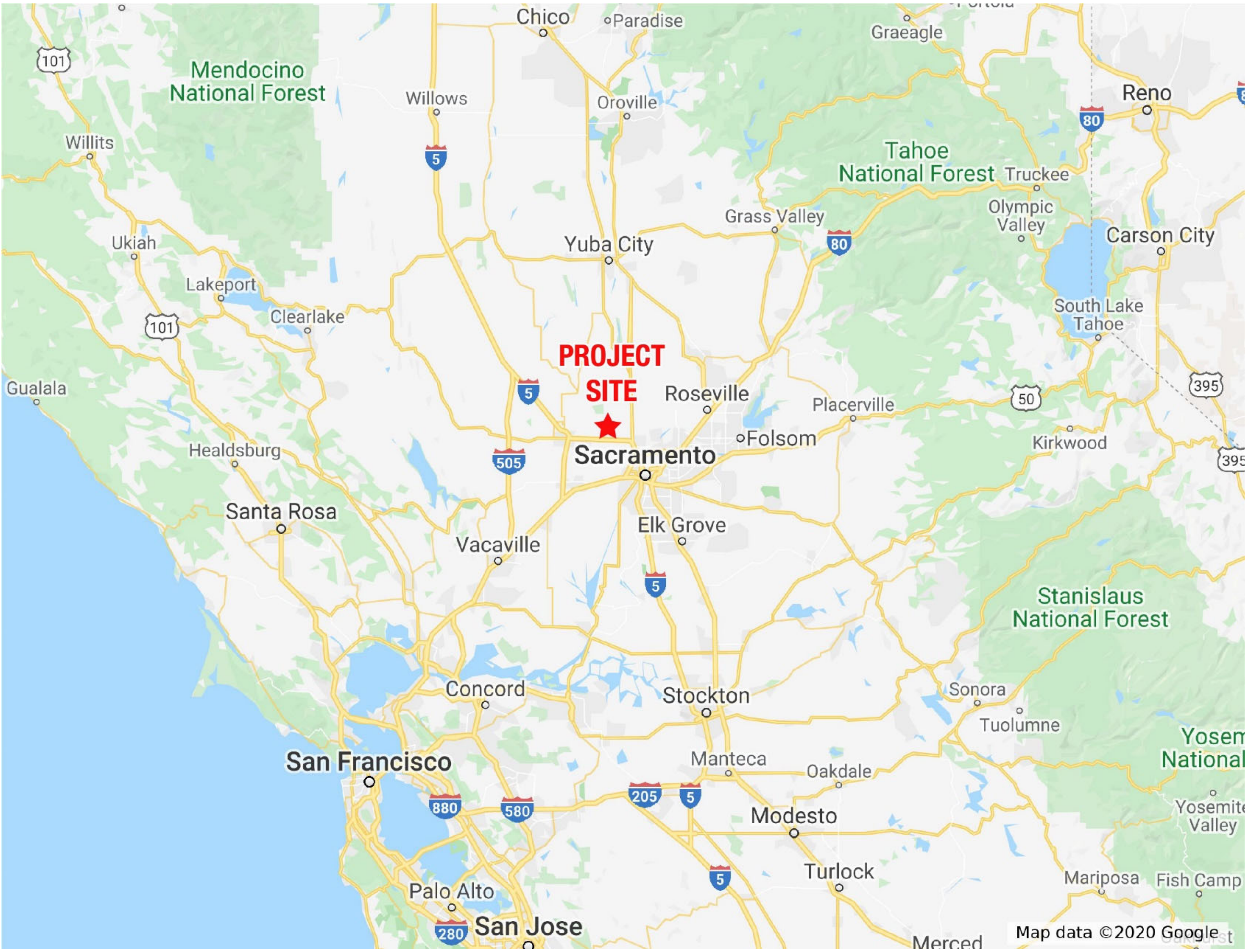
The Project provides 1,314 automobile parking spaces. Additionally, 13 aircraft parking spaces, 141 truck loading docks, and 343 trailer parking spaces.

Airport Master Plan Update

The SMF Master Plan Update involves airport expansion to accommodate growth over the next 20 years. Currently, more than 2.1 million domestic passengers and more than 1.6 million international passengers travel to airports outside of the Sacramento region to take flights.[1] Primarily, these passengers use airports in the Bay Area with San Francisco International Airport (SFO), Oakland International Airport (OAK), and San Jose International Airport (SJC) capturing the majority of the passenger service. Accordingly, if the Airport does not expand and/or provide additional passenger service that meets the need of traveler, these longer vehicular trips to Bay Area airports would be assumed to continue or even expand as the demand for service naturally increases with population growth over time. The provision of additional gates to serve this unmet local demand is a primary catalyst of the proposed Project.

[1] Campbell-Hill Aviation Group, LLC., *SMF Catchment Area Analysis,* April 2020 and Kimley-Horn, VMT Assessment & Local Access, Safety, and Circulation Study, July 2020.

Exhibit 1: Regional Location Map

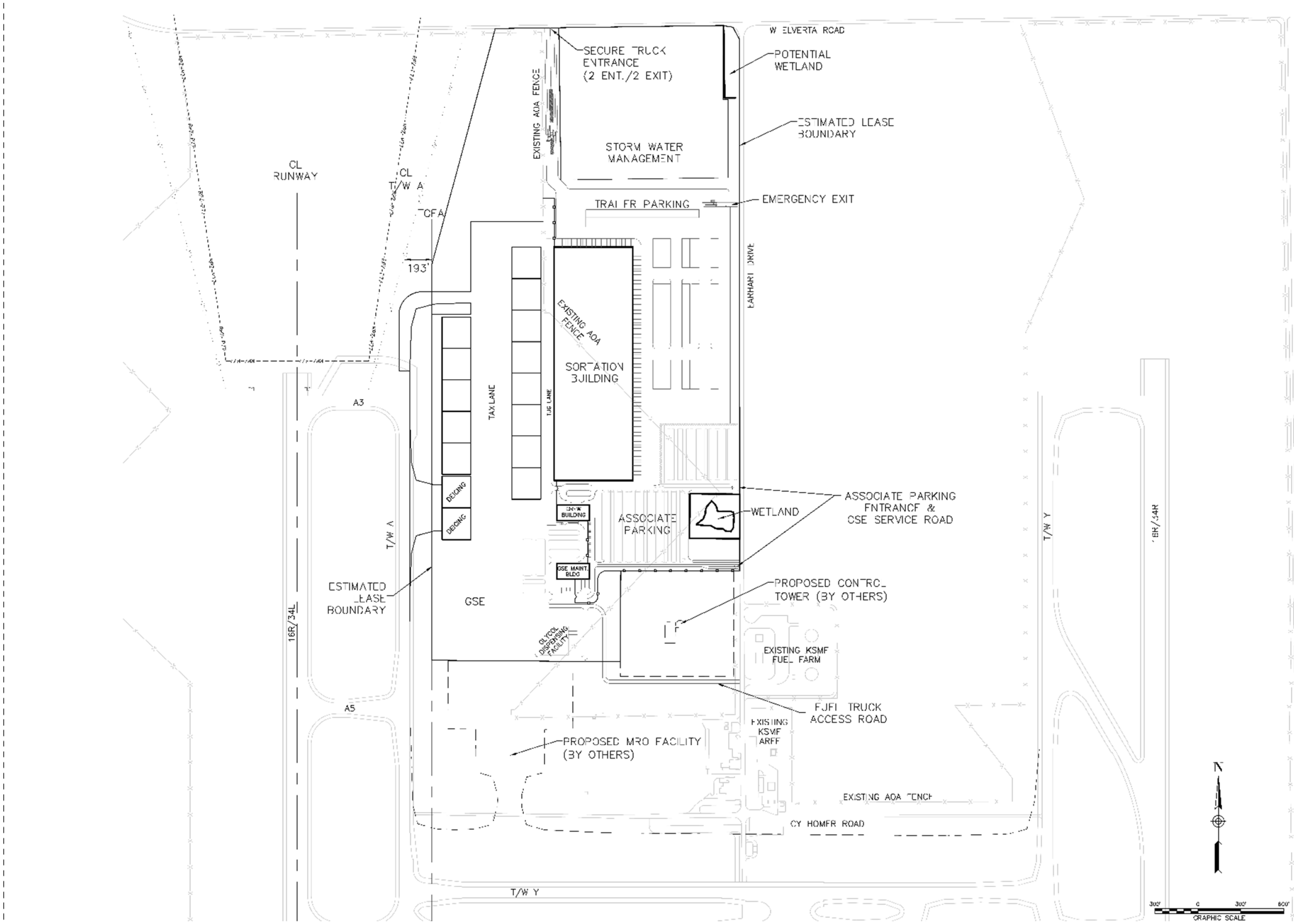


Source: Google Maps, 2020

Exhibit 2: Project Vicinity Map

Source: Google Maps, 2020

Exhibit 3: Conceptual Site Plan



Source: Gresham Smith, 2019

2 ENVIRONMENTAL SETTING

2.1 Climate and Meteorology

The California Air Resources Board (CARB) divides the State into 15 air basins that share similar meteorological and topographical features. The Project is located within the Sacramento Valley Air Basin (SVAB), which includes Butte, Colusa, Glenn, Shasta, Sutter, Tehama, Yolo, Yuba, portions of Placer and Solano counties, as well as Sacramento County. The SVAB is bounded by the North Coast Ranges on the west and the Northern Sierra Nevada Mountains on the east.[2] The intervening terrain is flat. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors along with applicable regulations are discussed below.

The SVAB has a Mediterranean climate, characterized by hot dry summers and mild rainy winters. The annual average temperature in SVAB ranges from 20 to 115 degrees Fahrenheit with summer highs around 90 degrees and winter lows occasionally below freezing. The average annual rainfall in SVAB is usually about 20 inches in the winter and spring with snowfall being rare. Wind in this air basin are moderate in strength and the breezes vary from moist to dry land flows from the north. The average wind speed is about 8 miles per hour at SMF and the predominate wind directions are from the south-southeast in the spring, summer, and fall, trending to the north-northwest in the winter.[3]

The mountains surrounding SVAB create a barrier to airflow, which can create inversion layers, trapping air pollutants in the Sacramento Valley when meteorological conditions are right. Inversion layers are formed when temperature increases with elevation above ground, or when a mass of warm dry air settles over a mass of cooler air near the ground. During the winter, surface inversions (0 to 500 feet) occur and subsidence inversions (1,000 to 2,000 feet) occur during the summer.

Ozone season in the SVAB occurs in the months of May through October and is characterized by steady morning air or light winds with the Delta sea breeze arriving in the afternoon and out of the southwest. The evening breezes usually transport airborne pollutants to the north out of the SVAB. From July to September, a phenomenon called the “Schultz Eddy” prevents this from occurring half of the days in July to September. The Schultz Eddy would cause the wind pattern and pollutants to circle back southward instead of allowing for the prevailing wind patterns to move north carrying pollutants out of the SVAB. This phenomenon exacerbates pollution levels in the SVAB and increases the likelihood of violating federal and state air quality standards.

2.2 Air Pollutants of Concern

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by state and federal laws. These regulated air pollutants are known as “criteria air pollutants” and are categorized into primary and secondary pollutants.

Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide (NO_X), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead are primary air pollutants. Of these, CO, NO_X, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants.

[2] Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County*, 2009.
[3] Sacramento International Airport Master Plan Draft EIR, 2007.

ROG and NO_X are criteria pollutant precursors and form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. For example, the criteria pollutant ozone (O_3) is formed by a chemical reaction between ROG and NO_X in the presence of sunlight. O_3 and nitrogen dioxide (NO_2) are the principal secondary pollutants. Sources and health effects commonly associated with criteria pollutants are summarized in **Table 2: Air Contaminants and Associated Public Health Concerns**.

Table 2: Air Contaminants and Associated Public Health Concerns

Pollutant	Major Man-Made Sources	Human Health Effects
Particulate Matter (PM_{10} and $PM_{2.5}$)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; asthma; chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility.
Ozone (O_3)	Formed by a chemical reaction between reactive organic gases/volatile organic compounds (ROG or VOC)[1] and nitrogen oxides (NO_X) in the presence of sunlight. Motor vehicle exhaust industrial emissions, gasoline storage and transport, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
Sulfur Dioxide (SO_2)	A colorless gas formed when fuel containing sulfur is burned and when gasoline is extracted from oil. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to O_3. Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Lead (Pb)	Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Due to the phase out of leaded gasoline, metals processing is the major source of lead emissions to the air today. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.	Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ.

[1] Volatile Organic Compounds (VOCs or Reactive Organic Gases [ROG]) are hydrocarbons/organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including ROGs and VOCs. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

Source: California Air Pollution Control Officers Association (CAPCOA), Health Effects, http://www.capcoa.org/health-effects/, Accessed June 9, 2020.

Toxic Air Contaminants

Toxic air contaminants (TACs) are airborne substances that can cause short-term (acute) or long-term (i.e. chronic, carcinogenic or cancer causing) adverse human health effects (i.e. injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes more than 200 compounds, including particulate emissions from diesel-fueled engines.

CARB identified diesel particulate matter (DPM) as a toxic air contaminant. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine. Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. DPM poses the greatest health risk among the TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Due to their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

Ambient Air Quality

CARB monitors ambient air quality at approximately 250 air monitoring stations across the State. These stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Existing levels of ambient air quality, historical trends, and projections near the Project are documented by measurements made by the Sacramento Metropolitan Air Quality Management District (SMAQMD), the air pollution regulatory agency in the SVAB that maintains air quality monitoring stations which process ambient air quality measurements.

Pollutants of concern in Sacramento County include O_3, PM_{10}, and $PM_{2.5}$. The closest air monitoring station to the Project that monitors ambient concentrations of these pollutants is the Woodland-Gibson Road Monitoring Station (located approximately 8.7 miles to the southwest). Local air quality data from 2016 to 2018 are provided in **Table 3: Ambient Air Quality Data**, which lists the monitored maximum concentrations and number of exceedances of state or federal air quality standards for each year.

Table 3: Ambient Air Quality Data

Criteria Pollutant	2016	2017	2018
Ozone (O_3) [1]			
1-hour Maximum Concentration (ppm)	0.095	0.089	0.095
8-hour Maximum Concentration (ppm)	0.076	0.074	0.085
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	1	0	1
NAAQS 8-hour (>0.070 ppm)	4	2	2
Carbon Monoxide (CO) [2]			
1-hour Maximum Concentration (ppm)	1.60	1.87	3.29
Number of Days Standard Exceeded			
NAAQS 1-hour (>35 ppm)	0	0	0
CAAQS 1-hour (>20 ppm)	0	0	0

Table 3: Ambient Air Quality Data

Criteria Pollutant	2016	2017	2018
Nitrogen Dioxide (NO_2) [2]			
1-hour Maximum Concentration (ppm)	52.0	61.0	53.0
Number of Days Standard Exceeded			
NAAQS 1-hour (>100 ppm)	0	0	0
CAAQS 1-hour (>0.18 ppm)	0	0	0
Particulate Matter Less Than 10 Microns (PM_{10}) [1]			
National 24-hour Maximum Concentration	69.4	128.5	201.1
State 24-hour Maximum Concentration	68.7	130.8	212.4
State Annual Average Concentration (CAAQS=20 μg/m^3)	19.7	22.0	26.1
Number of Days Standard Exceeded			
NAAQS 24-hour (>150 μg/m^3)	0.0	0.0	6.1
CAAQS 24-hour (>50 μg/m^3)	12.2	18.4	24.5
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$) [1]			
National 24-hour Maximum Concentration	16.4	60.1	165.4
State 24-hour Maximum Concentration	16.4	60.1	165.4
Number of Days Standard Exceeded			
NAAQS 24-hour (>35 μg/m^3)	0.0	12.3	12.3

NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; ppm = parts per million; μg/m^3 = micrograms per cubic meter; – = not measured
[1] Measurements taken at the Woodland-Gibson Road Monitoring Station at 41929 E Gibson Rd, Woodland, CA 95776 (CARB# 57582)
[2] Measurements taken at the Bercut Drive Monitoring Station at 100 Bercut Drive, Sacramento, CA 95814 (CARB# 34279)

Source: All pollutant measurements are from the CARB Aerometric Data Analysis and Management system database (https://www.arb.ca.gov/adam) except for CO, which were retrieved from the CARB Air Quality and Meteorological Information System (https://www.arb.ca.gov/aqmis2/aqdselect.php).

2.3 Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than is the general population. Sensitive receptors that are in proximity to localized sources of toxics are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The nearest sensitive land uses surrounding the Project consist mostly of single-family residential communities. Sensitive land uses nearest to the Project are shown in **Table 4: Sensitive Receptors**.

Table 4: Sensitive Receptors

Receptor Description	Distance and Direction from the Project
Single-Family Residential Community	3.24 miles to the southeast
Single-Family Residential Community	3.31 miles to the southeast
Golden Poppy Park	3.44 miles to the southeast
Byers Preschool	3.45 miles to the southeast
New School (currently being constructed)	3.60 miles to the southeast
Westlake Charter School	4.07 miles to the east
Natomas Pacific Pathways Prep High School	4.19 miles to the southeast

Source: Google Earth Pro, 2020.

3 REGULATORY SETTING

3.1 Federal

Federal Clean Air Act

Air quality is federally protected by the Federal Clean Air Act (FCAA) and its amendments. Under the FCAA, the United States Environmental Protection Agency (U.S. EPA) developed the primary and secondary National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants including O_3, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and lead. Proposed projects in or near nonattainment areas could be subject to more stringent air-permitting requirements. The FCAA requires each state to prepare a State Implementation Plan to demonstrate how it will attain the NAAQS within the federally imposed deadlines.

The U.S. EPA can withhold certain transportation funds from states that fail to comply with the planning requirements of the FCAA. If a state fails to correct these planning deficiencies within two years of Federal notification, the U.S. EPA is required to develop a Federal implementation plan for the identified nonattainment area or areas. The provisions of 40 Code of Federal Regulations Parts 51 and 93 apply in all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan. The U.S. EPA has designated enforcement of air pollution control regulations to the individual states. Applicable federal standards are summarized in **Table 5: State and Federal Ambient Air Quality Standards**.

Table 5: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standards[1]	Federal Standards[2]
Ozone (O_3) [2, 5, 7]	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm
	1 Hour	0.09 ppm (180 µg/m^3)	NA
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	0.10 ppm[11]
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2) [8]	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)
	Annual Arithmetic Mean	NA	0.03 ppm (80 µg/m^3)
Particulate Matter (PM_{10}) [1, 3, 6]	24-Hour	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	NA
Fine Particulate Matter ($PM_{2.5}$) [3, 4, 6, 9]	24-Hour	NA	35 µg/m^3
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3
Sulfates (SO_{4-2})	24 Hour	25 µg/m^3	NA
Lead (Pb) [10, 11]	30-Day Average	1.5 µg/m^3	NA
	Calendar Quarter	NA	1.5 µg/m^3
	Rolling 3-Month Average	NA	0.15 µg/m^3
Hydrogen Sulfide (H_2S)	1 Hour	0.03 ppm (0.15 µg/m^3)	NA
Vinyl Chloride (C_2H_3Cl) [10]	24 Hour	0.01 ppm (26 µg/m^3)	NA

ppm = parts per million; µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; – = no information available.

1 California standards for O_3, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e. all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. Measurements are excluded that CARB determines would occur less than once per year on the average. The Lake Tahoe carbon monoxide standard is 6.0 ppm, a level one-half the national standard and two-thirds the State standard.

Table 5: State and Federal Ambient Air Quality Standards			
Pollutant	**Averaging Time**	**State Standards[1]**	**Federal Standards[2]**
2 National standards shown are the "primary standards" designed to protect public health. National standards other than for O_3, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour O_3 standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour O_3 standard is attained when the 3-year average of the 4th highest daily concentrations is 0.070 ppm or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 μg/m3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 $\mu g/m^3$. 3 Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard. NAAQS are set by the U.S. EPA at levels determined to be protective of public health with an adequate margin of safety. 4 On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour O_3 concentration per year, averaged over three years, is equal to or less than 0.070 ppm. U.S. EPA will make recommendations on attainment designations by October 1, 2016, and issue final designations October 1, 2017. Nonattainment areas will have until 2020 to late 2037 to meet the health standard, with attainment dates varying based on the O_3 level in the area. 5 The national 1-hour O_3 standard was revoked by the U.S. EPA on June 15, 2005. 6 In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}. 7 The 8-hour California O_3 standard was approved by the CARB on April 28, 2005 and became effective on May 17, 2006. 8 On June 2, 2010, the U.S. EPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO_2 NAAQS however must continue to be used until one year following U.S. EPA initial designations of the new 1-hour SO_2 NAAQS. 9 In December 2012, U.S. EPA strengthened the annual $PM_{2.5}$ NAAQS from 15.0 to 12.0 $\mu g/m^3$. In December 2014, the U.S. EPA issued final area designations for the 2012 primary annual $PM_{2.5}$ NAAQS. Areas designated “unclassifiable/attainment” must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015. 10 CARB has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure below which there are no adverse health effects determined. 11 National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations effective December 31, 2011.			
Source: South Coast Air Quality Management District, *Air Quality Management Plan*, 2016; California Air Resources Board, *Ambient Air Quality Standards*, May 6, 2016.			

Conformity

Conformity is defined as conformity to the SIPs (or Federal Implementation Plans [FIPs]) purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. It requires that federal activities will not:

1. Cause or contribute to any new violation of any standard in any area;
2. Increase the frequency or severity of any existing violation of any standard in any area; or
3. Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The General Conformity Rule was published in the Federal Register on November 30, 1993, and amended on April 5, 2010. The General Conformity Rule established a process based on emissions analysis to determine whether a federal action conforms to the SIP. The rule defines emissions as “direct” or “indirect” (see 40 CFR § 93.152). Actions that do not meet the definitions of direct or indirect emissions are exempt from the General Conformity Rule. “Direct emissions” are those that occur at the same time and place as the federal action. The definition of “indirect emissions” contains four criteria, all of which must be met. As stated in 40 CFR § 93.152, indirect emissions means those emissions of a criteria pollutant or its precursors:

- that are caused or initiated by the federal action and originate in the same nonattainment
- or maintenance area but occur at a different time or place from the action;
- that are reasonably foreseeable;
- that the agency can practically control; and
- for which the agency has continuing program responsibility.

When developing the General Conformity Rule, the EPA recognized that many actions conducted by federal agencies do not result in substantial increases in air pollutant emissions in nonattainment and maintenance areas. Therefore, the EPA established threshold levels (also referred to as *de minimis* levels) for emissions of each of the criteria pollutants. When the sum of the increases in direct and indirect emissions caused by a project would be less than the *de minimis* levels, a project would not require a general conformity determination.

3.2 State of California

California Air Resources Board

CARB administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in **Table 5**, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates.

The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMPs also serve as the basis for the preparation of the State Implementation Plan for meeting federal clean air standards for the State of California. Like the U.S. EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events such as wildfires, volcanoes, etc. are not considered violations of a state standard, and are not used as a basis for designating areas as nonattainment. The applicable State standards are summarized in **Table 5**.

3.3 Regional

Sacramento Metropolitan Air Quality Management District

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is the air pollution control agency for Sacramento County. The agency's primary responsibility is ensuring that state and federal ambient air quality standards are attained and maintained in the SVAB. The SMAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, and many other activities. All projects are subject to SMAQMD rules and regulations in effect at the time of construction.

The SMAQMD is also the lead agency in charge of developing attainment plans, with input from the U.S. EPA, the Sacramento Area Council of Governments (SACOG) and CARB. The attainment plans are comprehensive plans that includes control strategies for stationary and area sources, as well as for on-road and off-road mobile sources. SACOG has the primary responsibility for providing future growth projections and the development and implementation of transportation control measures. CARB, in coordination with federal agencies, provides the control element for mobile sources.

The Sacramento Federal Nonattainment Area (SFNA) was designated as "severe" nonattainment for the 1979 1-Hour ozone NAAQS. The 1-Hour standard was revoked when the U.S. EPA published the Final Phase 1 Rule (69 FR 23951) implementing a more stringent 1997 8-Hour ozone NAAQS. On October 18, 2012, the U.S. EPA determined that the SFNA attained the revoked 1-Hour ozone standard. However, the SMAQMD would still be subject to anti backsliding requirements for the 1-Hour standard unless a Resignation Substitution (RS) Request is approved by the U.S. EPA. The RS request was approved by the SMAQMD on September 28, 2017 and forwarded to the U.S. EPA by CARB. Once approved by the U.S. EPA, this RS request would redesignate the SFNA to attainment and remove the previous CAA obligations associated with that standard.[4]

The latest attaintment plans (*Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan*) for the Sacramento O_3 nonattainment area was adopted by the SMAQMD on July 24, 2017, and the four other air districts that comprise the SFNA (Yolo-Solano AQMD, Feather River AQMD, Placer County APCD, and El Dorado County AQMD). The purpose of the attainment plans is to set forth regulations that govern how the region and State would comply with the FCAA requirements and lead the SFNA into compliance with the federal 2008 8-hour Ozone air quality standard of 75 ppb by an attainment year of 2024. The attainment plans incorporate the latest scientific and technological information and planning assumptions, including the *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) and updated emission inventory methodologies for various source categories.

In December 2019, the SMAQMD published the *Guide to Air Quality Assessment in Sacramento County* to provide to help local government agencies and consultants to develop environmental documents required by California Environmental Quality Act (CEQA). The guidance document also provides identification of suggested thresholds of significance for criteria pollutants for both construction and operation (see discussion of thresholds below). With the help of the *Guide to Air Quality Assessment in Sacramento County* and associated guidance, local land use planners and consultants are able to analyze and document how proposed and existing projects affect air quality in order to meet the requirements of the CEQA review process. The SMAQMD periodically provides supplemental guidance and updates to the handbook on their website.

The SACOG is the regional planning agency for Sacramento metropolitan region and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. Under federal law, SACOG is designated as a Metropolitan Planning Organization and under State law as a Regional Transportation Planning Agency and a Council of Governments.

[4] Sacramento Metropolitan Air Quality Management District, *Sacramento Federal Ozone Nonattainment Area Redesignation Substitution Request for the 1979 1-Hour Standard,* 2017.

The state and federal attainment status designations for Sacramento County are summarized in **Table 6: Sacramento County Attainment Status**. Sacramento County is currently designated as a nonattainment area with respect to the State 1-hour and 8-hour O_3, 24-hour PM_{10} standards, as well as the national 8-hour O_3 and 24-hour $PM_{2.5}$ standards. Sacramento County is designated as attainment or unclassified for the remaining state and federal standards.

Table 6: Sacramento County Attainment Status

Pollutant	State	Federal
Ozone (O_3) (1 Hour Standard)	Non-Attainment	Attainment
Ozone (O_3) (8 Hour Standard)	Non-Attainment	Non-Attainment (Severe-15)
Particulate Matter ($PM_{2.5}$) (24 Hour Standard)	Attainment	Non-Attainment
Particulate Matter ($PM_{2.5}$) (Annual Standard)	Attainment	Attainment
Particulate Matter (PM_{10}) (24 Hour Standard)	Non-Attainment	Attainment (Maintenance)
Particulate Matter (PM_{10}) (Annual Standard)	Non-Attainment	–
Carbon Monoxide (CO) (1 Hour Standard)	Attainment	Attainment (Maintenance)
Carbon Monoxide (CO) (8 Hour Standard)	Attainment	Attainment (Maintenance)
Nitrogen Dioxide (NO_2) (1 Hour Standard)	Attainment	Unclassifiable/Attainment
Nitrogen Dioxide (NO_2) (Annual Standard)	Attainment	Unclassifiable/Attainment
Sulfur Dioxide (SO_2) (1 Hour Standard)	Attainment	Unclassifiable/Attainment
Sulfur Dioxide (SO_2) (24 Hour Standard)	Attainment	–
Lead (Pb) (30 Day Standard)	–	–
Lead (Pb) (3 Month Standard)	Attainment	Attainment
Sulfates (SO_{4-2}) (24 Hour Standard)	Attainment	–
Hydrogen Sulfide (H_2S) (1 Hour Standard)	Unclassified	–

Source: Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County*, 2009; United States Environmental Protection Agency, *Nonattainment Areas for Criteria Pollutants (Green Book)*, 2018.

The following is a list of SMAQMD rules that are required of construction activities associated with the Project:

- **Rule 201 (General Permit Requirements) -** This rule provides an orderly procedure for the review of new sources of air pollution and modification and operation of existing sources through issuance of permits. For any projects that include the use of equipment capable of releasing emissions to the atmosphere, permits may be required from SMAQMD prior to operation.

- **Rule 402 (Nuisance)** – This rule prohibits the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. This rule does not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

- **Rule 403 (Fugitive Dust)** – This rule requires fugitive dust sources to implement best available control measures for all sources, and all forms of visible particulate matter are prohibited from crossing any property line. This rule is intended to reduce fugitive dust emissions into the atmosphere. This rule does not apply to emissions emanating from agricultural operations, unworked land designated as reclaimed for agriculture, or unpaved roads for public travel.

- **Rule 404 (Particulate Matter) –** This rule is intended to limit the quantity of particulate matter in the atmosphere through establishment of an emission concentration limit.

- **Rule 405 (Dust and Condensed Fumes)** – This rule is intended to limit the discharge of dust and condensed fumes into the atmosphere by establishing emission rates based on process weight.

- **Rule 442 (Architectural Coatings)** – This rule requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce ROG emissions from the use of these coatings, primarily by placing limits on the ROG content of various coating categories.

- **Rule 453 (Cutback and Emulsified Asphalt Paving Materials)** – This rule is to limit emissions of volatile organic compounds from the use of cutback and emulsified asphalt in paving materials, paving and maintenance operations.

3.4 Local

County of Sacramento General Plan

The County of Sacramento General Plan is a roadmap that encompasses the hopes, aspirations, values and dreams of the community. The General Plan has goals and policies to improve air quality through transportation infrastructure. Since there are limited Project-relevant policies specific to air quality, related policies are mentioned in this section. Where inconsistencies exist, if any, they are addressed in the respective impact analysis below. General Plan policies that directly address reducing and avoiding natural resources impacts include the following:

Goal 1: Improve air quality to promote the public health, safety, welfare, and environmental quality of the community.

Policy AQ-3: Buffers and/or other appropriate mitigation shall be established on a project-by-project basis and incorporated during review to provide for protection of sensitive receptors from sources of air pollution or odor. The California Air Resources Board's "Air Quality and Land Use Handbook: A Community Health Perspective", and the County of Sacramento General Plan 2 Air Quality Element

Amended September 26, 2017 AQMD's approved Protocol (Protocol for Evaluating the Location of Sensitive Land uses Adjacent to Major Roadways) shall be utilized when establishing these buffers.

Policy AQ-4: Developments which meet or exceed thresholds of significance for ozone precursor pollutants as adopted by the Sacramento Metropolitan Air Quality Management District (SMAQMD), shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation as to technical adequacy by the Sacramento Metropolitan Air Quality Management District.

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

4.1 Air Quality Thresholds

Based upon the criteria derived from Appendix G of the CEQA Guidelines, a Project normally would have a significant effect on the environment if it would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable state or federal ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

SMAQMD Thresholds

The significance criteria established by SMAQMD may be relied upon to make the above determinations. According to the SMAQMD, an air quality impact is considered significant if the Project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The SMAQMD has established thresholds of significance for air quality during construction and operational activities of land use development projects, as shown in **Table 7: Sacramento Metropolitan Air Quality Management District Emissions Thresholds**.

Table 7: Sacramento Metropolitan Air Quality Management District Emissions Thresholds

	Construction Phase	Operational Phase
Mass Emission Thresholds		
NO_X (ozone precursor)	85 lbs/day	65 lbs/day
ROG (VOC) (ozone precursor)	None	65 lbs/day
PM_{10}	Zero (0). If all feasible BACT[1]/BMPs[2] are applied, then 80 lbs/day and 14.6 tons/year	Zero (0). If all feasible BACT/BMPs are applied, then 80 lbs/day and 14.6 tons/year
$PM_{2.5}$	Zero (0). If all feasible BACT/BMPs are applied, then 82 lbs/day and 15 tons/year	Zero (0). If all feasible BACT/BMPs are applied, then 82 lbs/day and 15 tons/year
1. BACT – Best Available Control Technology 2. BMP – Best Management Practices		
Source: Sacramento Metropolitan Air Quality Management District, SMAQMD Thresholds of Significance Table, 2020.		

The SMAQMD has established emission thresholds for PM_{10} and $PM_{2.5}$ and ozone precursors because the Sacramento Region does not meet State and federal particulate matter and ozone ambient air quality standards. Emissions of particulate matter and ozone precursors from an individual project could contribute to the cumulative non-attainment problem. A “considerable” or "substantial" contribution means one that exceeds the mass emissions threshold levels.[5]

[5] Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County*, 2009.

The construction and operational mass emissions thresholds for ozone precursors correlate to the NO_X and ROG reductions from heavy-duty vehicles and land use project emission reduction requirements committed to in the 2004 Ozone Attainment Plan for the Sacramento Federal Ozone Nonattainment Area. These thresholds were adopted by the District's Board of Directors in March 2002 and are based on the SMAQMD's document Foundation for a Threshold: Justification for Air Quality Thresholds of Significance in the Sacramento Federal Nonattainment Area.

SMAQMD recommends that projects anticipated to emit 65 pounds or more of NO_X per day, 65 pounds or more of ROG per day, 80 pounds or more of PM_{10} per day or 82 pounds or more of $PM_{2.5}$ per day are considered operationally significant for CEQA purposes and should apply feasible mitigation.

Localized Carbon Monoxide

In addition to the daily thresholds listed above, development associated with the Project would also be subject to the ambient air quality standards. These are addressed though an analysis of localized CO impacts. The significance of localized impacts depends on whether ambient CO levels near the Project are above state and federal CO standards (the more stringent California standards are 20 ppm for 1-hour and 9 ppm for 8-hour). Sacramento County has been designated as attainment under the 1-hour and 8-hour standards.

4.2 Methodology

This air quality impact analysis considers construction and operational impacts associated with the Project. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod). CalEEMod is a Statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Air quality impacts were assessed according to methodologies recommended by CARB and the SMAQMD.

Construction equipment, trucks, worker vehicles, and ground-disturbing activities associated with Project construction would generate emissions of criteria air pollutants and precursors. Daily regional construction emissions are estimated by assuming construction occurs at the earliest feasible date (i.e., a conservative estimate of construction activities) and applying off-road, fugitive dust, and on-road emissions factors in CalEEMod.

Cargo Facility construction would require approximately 84,605 cubic yards of concrete that would be provided from an on-site batch plant. Concrete batch plant fugitive dust sources consist of fugitive dust from the cement and fly ash delivery to storage silos, from the loading of the cement, aggregate, sand and fly ash to the weight hoppers prior to the mixing process to form concrete, and from wind-blown dust from the active sand and aggregate storage piles. Potential emissions were calculated using EPA AP-42 equations and emission factors[6]. It was assumed that the concrete batch plant equipment meets the appropriate best available control technologies (BACT) prescribed by the BAAQMD for such facilities, including the use of water sprays for aggregate handling and storage piles, enclosures, and venting of cement handling and storage to baghouse.

Project operations would result in emissions of area sources (consumer products), energy sources (electricity), and mobile sources (motor vehicles from Project generated vehicle trips). CalEEMod energy

6 U.S. Environmental Protection Agency, *AP-42 Section 11.12 Concrete Batching*, 2006.

inputs were adjusted to be consistent with the most current version of the California Title 24, Part 6 Building Energy Efficiency Standards. The natural gas use was adjusted to comply with BMP-1 (i.e., no natural gas use). Project-generated increases in operational emissions would be predominantly associated with motor vehicle use. The increase of traffic over existing conditions as a result of the Project was obtained from the Project's VMT Assessment and Local Access, Safety, and Circulation Study prepared by Kimley-Horn (July 2020). Other operational emissions from area, energy, and stationary sources were quantified in CalEEMod based on land use and stationary source activity data. **Table 8: CalEEMod Land Use and Trip Generation** summarizes the land use and vehicle trip data modeled for the Cargo Facility and the Airport Master Plan Update.

Table 8: CalEEMod Land Use and Trip Generation

Land Use Type	Size (Thousand Square Feet)	Lot Acreage	Daily Trip Rate	Total Daily Trips
Cargo Facility				
Cargo Facility (Unrefrigerated Warehouse)	950	21.81	9.8	9,310
Parking, Ramp, and Taxi Lane (Parking Lot/Other Non-Asphalt [Concrete] Surfaces)	2,434.57	55.89	0	0
Total	**3,384.568**	**77.70**	**N/A**	**9,310**
Airport Master Plan Update				
Concourse Expansion	267.73	6.15	27.92	7,475
Consolidated Rental Car Facility	2,252.50	10.30	0	0
Expansion of Commercial Area/Airside Commercial Development (Industrial/Warehouse)	3,908.23	329.59	1.68	6,566
Total	**6,428.46**	**346.04**	**N/A**	**14,041**

Mobile source emissions rates in CalEEMod have been updated with CARB SAFE Rule adjustment factors and EMFAC2017 emission rates consistent with the methodology described in Section 5.2 *Methodology for Converting EMFAC2014 Emission Rates into CalEEMod Vehicle Emission Factors* of *Appendix A: Calculation Details for CalEEMod* in the *CalEEMod User Guide.* Additionally, CO_2 intensity adjusted per Table A-8 in the SMAQMD's document Greenhouse Gas Thresholds for Sacramento County (2020).

As discussed above, the SMAQMD provides significance thresholds for emissions associated with proposed Project construction and operations. The proposed Project's construction and operational emissions are compared to the daily criteria pollutant emissions significance thresholds in order to determine the significance of a Project's impact on regional air quality.

Air Quality Mitigation Plan

SMAQMD has developed guidance to mitigate operational emissions for projects subject to CEQA. SMAQMD recommends that project applicants prepare an Air Quality Mitigation Plan for all projects that exceed SMAQMD's operational significant thresholds of 65 pounds per day (ppd) for ROG and/or 65 ppd for NO_X.

For projects that are included in the current SIP, SMAQMD recommend a 15 percent reduction of ozone precursor mobile source emissions. For projects not considered in the SIP, SMAQMD recommends a 35 percent reduction of ozone precursors. These reductions would be considered feasible mitigation and should be included in an AQMP.

5 POTENTIAL IMPACTS AND MITIGATION

5.1 Air Quality Analysis

Threshold 5.1	**Would the Project conflict with or obstruct implementation of the applicable air quality plan?**

Summary of the 2007 SMF Master Plan Impacts: Less than significant. The adopted SMF Master Plan EIR determined that buildout of Phase I and II of the SMF Master Plan is consistent with the SACOG land use projections and population forecasts.

Cargo Facility Analysis: As described in the regulatory framework section above, applicable air quality plans include the latest attainment plans, as well as the air district rules, and the County General Plan. As part of its enforcement responsibilities, the U.S. EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan that demonstrates the means to attain the federal standards. The State Implementation Plan must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under State law, the CCAA requires an air quality attainment plan to be prepared for areas designated as nonattainment regarding the state and federal ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

The Project is located within the SVAB, which is under the jurisdiction of the SMAQMD. The SMAQMD is required, pursuant to the FCAA, to reduce emissions of criteria pollutants for which the SVAB is in nonattainment. To reduce such emissions, the SMAQMD drafted the latest attainment plan (*Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan*). The attainment plans establish rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. The attainment plans are a regional and multi-agency effort including the SMAQMD, the CARB, the SACOG, and the U.S. EPA. The plan's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including SACOG's 2016 RTP/SCS, updated emission inventory methodologies for various source categories, and SACOG's latest growth forecasts. SACOG's latest growth forecasts were defined in consultation with local governments and with reference to local general plans. To determine compliance with the applicable air quality plan, the SMAQMD recommends comparing the project to the SACOG growth projections included in the MTP/SCS, a comparison of the project's projected VMT and population growth rate.

As discussed in the Project VMT Assessment (prepared by Kimley-Horn, July 2020), the employee VMT from the proposed cargo facility would exceed the SACOG region's average of 12.58 vehicle miles per employee. In addition, the operational air emissions from the cargo facility would exceed SMAQMD thresholds despite implementation of Mitigation Measures AQ-6 through AQ-8. Therefore, the proposed cargo facility could potentially conflict with the SMAQMD's ability to achieve emissions reductions as part of their air quality attainment plans at the project level.

Conformity Analysis

Projects requiring approval or funding from federal agencies and that are in areas designated as nonattainment or maintenance for the NAAQS may be subject to the U.S. EPA's Conformity Rule. The two types of federal conformity are Transportation Conformity and General Conformity. Transportation Conformity applies to those projects that will have FHWA or Federal Transit Authority (FTA) funding or require FHWA/FTA approval. General Conformity applies to those projects that will have funding or require approval from any federal agency other than FHWA/FTA. The proposed Project requires Federal Aviation Administration [FAA] approval, and therefore, General Conformity would apply to the Project.

Conformity refers to conforming to, or being consistent with, SIP for compliance with the FCAA. The U.S. EPA's Conformity Rule requires SIP conformity determinations on transportation plans, programs, and projects before they are approved or adopted (i.e., eliminating or reducing the severity and number of violations of the NAAQS, and achieving expeditious attainment of such standards [40 C.F.R. § 93]). Federal activities, such as federally sponsored projects, may not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emission reductions toward attainment.

To determine whether projects are subject to the General Conformity determination requirements, the U.S. EPA has established General Conformity *de minimis* threshold values (in tons per calendar year) for each of the criteria pollutants for each type of federally designated nonattainment and maintenance area. If the emissions generated by construction or operation the Project (on an area-wide basis) are less than these threshold values, the effects of the proposed Project are not considered to be significant, the General Conformity rule is not applicable, and no additional analyses are required. If the emissions are greater than these values, compliance with the General Conformity rule must be demonstrated. General Conformity rule compliance involves evaluating plans and programs to determine and demonstrate that the Project meets the requirements of the FCAA and the applicable SIP.

General Conformity requirements apply only to federally designated maintenance and nonattainment areas. The proposed Project is located in an area federally designated as severe nonattainment for the 8-hour ozone standard, nonattainment for the 24-hour $PM_{2.5}$ standard, and attainment or unclassified for all other criteria pollutants. The applicable General Conformity *de minimis* threshold values, according to 40 CFR Part 93, are 25 tons per year for NO_X and ROG, and 100 tons per year for $PM_{2.5.}$

<u>Construction Emissions</u>

As indicated below in **Table 12**, construction of the proposed cargo facility would not exceed the General Conformity thresholds for $NO_{X,}$ ROG, and/or $PM_{2.5}$. The previously recommended mitigation measures for buildout of the SMF Master Plan (SMF Master Plan EIR Mitigation Measures AQ-1 through AQ-5) would continue to be required to minimize construction emissions from the Project. Construction emissions would be temporary and would cease once construction is completed.

<u>Operational Emissions</u>

As indicated below in **Table 13**, long-term emissions would not exceed the General Conformity *de minimis* thresholds during Project operations. No further analysis is required.

As discussed above, the Project's construction and operational emissions would be below the *de minimis* thresholds for General Conformity. Therefore, the General Conformity Rule is not applicable, and no additional analyses are required for conformity purposes. Furthermore, as the Project emissions would not exceed the de minimis thresholds, it would not interfere with the emissions budgets in the State Implementation Plan, would not cause or contribute to new violations, and would ensure attainment and maintenance of the NAAQS. Implementation of the Cargo Facility would not conflict with SMAQMD's attainment plans.

Airport Master Plan Update Impacts: The SMF Master Plan Update involves airport expansion to accommodate growth over the next 20 years. Currently, more than 3.7 million passengers travel to airports outside of the Sacramento region to take flights.[7] Accordingly, if the Airport does not expand and/or provide additional passenger service that meets the need of traveler, these longer vehicular trips to Bay Area airports would be assumed to continue or even expand as the demand for service naturally increases with population growth over time. The expansion associated with the Airport Master Plan Update would serve unmet local demand is a primary catalyst of the proposed Project. Estimates for future air travel prepared by the Airport currently assume that half of the anticipated growth over the next 20 years will result from recapturing passengers from these Bay Area airports.

According to the SMAQMD, aviation emissions from the proposed SMF Master Plan Update will be included in the Sacramento Regional Ozone SIP for the 2015 Ozone Standard, and the Second 10-Year PM_{10} Maintenance Plan. The SMAQMD is currently coordinating with the SMF to provide emissions estimates from the proposed SMF Master Plan Update to include in future SIPs.[8] It is also noted the Project VMT Assessment (prepared by Kimley-Horn, July 2020) determined that the SMF Master Plan Update would result in a net daily VMT reduction of 486,941 vehicle miles. As indicated below in **Table 14** and **Table 15**, construction and operations of the Airport Master Plan Update would not exceed the General Conformity federal de minimis thresholds for $NO_{X,}$ ROG, or $PM_{2.5}$. Therefore, as the Airport Master Plan Update would not cause or contribute to new NAAQS violations, would not worsen existing violations of the NAAQS, or delay attainment of the NAAQS. As the Airport Master Plan Update would reduce VMT in the region and the associated aviation emissions would be included in future SIPs for the Sacramento region, the SMF Master Plan Update would not conflict with SMAQMD's air quality attainment plans. Thus, the General Conformity Rule is not applicable, and no additional analyses are required for conformity purposes. A less than significant impact would occur in this regard.

Mitigation Measures: Mitigation Measures AQ-1 through AQ-5 from SMF Master Plan EIR and Mitigation Measures AQ-6 through AQ-9 (refer to Impact Threshold 5.2, below).

Level of Significance: Significant impact.

[7] Campbell-Hill Aviation Group, LLC., *SMF Catchment Area Analysis,* April 2020 and Kimley-Horn, VMT Assessment & Local Access, Safety, and Circulation Study, July 2020.

[8] E-mail communication with the Sacramento Air Quality Management District on October 2, 2020.

Threshold 5.2 Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable state or federal ambient air quality standard?

Summary of the 2007 SMF Master Plan Impacts: Less than significant with mitigation. The adopted SMF Master Plan EIR determined construction and operational emissions from buildout of the SMF Master Plan would exceed the CEQA significance threshold for NO_X in both Phases I and II and was found to be significant; see **Table 9: SMF Master Plan EIR Construction Emissions**, **Table 10: SMF Master Plan EIR Operational Air Emissions Inventory**, and **Table 11: SMF Master Plan EIR Incremental Operational Emissions**. However, construction impacts would be reduced to a less than significant level with Mitigation Measures AQ-1 through AQ-5 in the SMF Master Plan EIR. Operational NO_x impacts were determined to be significant despite implementation of Sacramento Airport County System (SCAS) mitigation measures. In addition, atmospheric dispersion modeling of the mitigated construction emissions showed that the ambient levels of PM_{10} and $PM_{2.5}$ associated with the Master Plan project would be below five percent of the state standards for these pollutants and was found not to be significant. Implementation of Mitigation Measure AQ-5 would minimize the generation of PM_{10} dust during construction activities.

Table 9: SMF Master Plan EIR Construction Emissions

Time Frame	Condition	Emissions (Pounds per Day)					
		Carbon Monoxide (CO)	Volatile Organic Compounds (VOCs)	Nitrogen Oxide (NO_x)	Sulfur Dioxide (SO_X)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Phase 1 (2008-2013)	Unmitigated	284	38	386	34	245	33
	Mitigated	284	38	309	34	77	14
Phase 2 (2014-2020)	Unmitigated	124	20	148	31	241	26
	Mitigated	124	20	118	31	78	9

Source: County of Sacramento, *Sacramento International Airport Master Plan Final Environmental Impact Report*, 2007.

Table 10: SMF Master Plan EIR Operational Emissions

Year	Condition	Emissions (Pounds per Day)					
		Carbon Monoxide (CO)	Volatile Organic Compounds (VOCs)	Nitrogen Oxide (NO_x)	Sulfur Dioxide (SO_X)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2004	Existing	7,787	616	2,649	210	73.0	64.0
2013	No Project Alternative	5,688	596	2,765	192	78.3	68.5
	Proposed Project	5,772	604	2,863	200	79.6	69.7
2020	No Project Alternative	4,218	512	2,614	196	73.7	63.8
	Proposed Project	5,140	622	3,270	248	89.7	77.5

Source: County of Sacramento, *Sacramento International Airport Master Plan Final Environmental Impact Report*, 2007.

Table 11: SMF Master Plan EIR Incremental Operational Emissions

Year	Emissions (Pounds per Day)					
	Carbon Monoxide (CO)	Volatile Organic Compounds (VOCs)	Nitrogen Oxide (NO_x)	Sulfur Dioxide (SO_X)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2013	-2,016	-12	214	-10	7	6
2020	-2,648	110	621	39	17	14

Source: County of Sacramento*, Sacramento International Airport Master Plan Final Environmental Impact Report*, 2007.

The SMF Master Plan EIR determined that operational emissions would increase over baseline conditions for NO_X and PM_{10} and $PM_{2.5}$ and total CO, SO_X, and VOC emissions to decline over baseline conditions largely because of federally and state-mandated improvements in motor vehicle and off-road engine emissions performance. Emissions for NO_X were projected to be above the CEQA significance threshold of 65 pounds/day with or without buildout of the SMF Master Plan.

Cargo Facility Analysis:

Construction Emissions

Construction associated with the proposed cargo facility would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the Project area include O_3-precursor pollutants (i.e. ROG and NO_X) and PM_{10} and $PM_{2.5}$. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SMAQMD's thresholds of significance.

Construction results in the temporary generation of emissions resulting from site grading, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities as well as weather conditions and the appropriate application of water.

The duration of construction activities associated with the Project is estimated to last approximately 16 months. Construction-generated emissions associated the Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See **Appendix A: Air Quality Modeling Data** for more information regarding the construction assumptions used in this analysis. Predicted maximum daily construction-generated emissions for the Project are summarized in in **Table 12: Cargo Facility Construction-Related Emissions**. The proposed Project would be required to comply with all SMAQMD standards for construction equipment during grading activities.

Mitigation Measures AQ-1 and AQ-2 include construction specifications and a required work plan to ensure compliance with all SMAQMD standards for construction equipment and the use of Tier 4 equipment where available during grading. Additionally, construction of the proposed Project would be required to comply with various SMAQMD rules, including Rule 402 (Nuisance) and Rule 403 (Fugitive Dust).

Table 12: Cargo Facility Construction-Related Emissions

Construction Year	Emissions (Maximum Pounds per Day)[1,2]					Emissions (Tons per Year)[1,2]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2021	9.32	77.70	73.35	14.29	5.79	0.40	4.02	2.93	1.01	0.48
2022	110.61	72.63	68.65	14.12	4.53	5.28	4.45	4.42	0.91	0.30
Concrete Batch Plant	0	0	0	16.34	15.15	0	0	0	0.72	0.67
Maximum (Including Concrete Batch Plant)	**110.61**	**77.70**	**73.35**	**30.63**	**20.94**	**5.28**	**4.45**	**4.42**	**1.73**	**1.15**
Threshold	*None*[3]	*85*[3]	*None*[3]	*80*[3]	*82*[3]	*25*[4]	*25*[4]	*N/A*[4]	*N/A*[4]	*100*[4]
Exceed Threshold?	**N/A**	**No**	**N/A**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Notes:
1. SMAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SMAQMD CEQA Guide (Chapter 3) were applied. No mitigation was applied to construction equipment. Refer to Appendix A for Model Data Outputs.
2. Total values are from CalEEMod and may not add up 100% due to rounding.
3. Sacramento Metropolitan Air Quality Management District, *SMAQMD Thresholds of Significance Table*, 2020.
4. United States Environmental Protection Agency, *De Minimis Tables*, updated May 27, 2020.

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

Fugitive dust emissions may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the Project vicinity. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby. SMAQMD Rules 402, 403, 404, 405 (prohibition of nuisances, watering of inactive and perimeter areas, track out requirements, establishing emissions rates to limit discharge of dust and condensed fumes, etc.), are applicable to the Project and were applied in CalEEMod to minimize fugitive dust emissions and fumes. SMF Master Plan EIR Mitigation Measures AQ-1 through AQ-5 require the implementation of dust control techniques covered in Rule 402, 403, 404, and 405 and other emissions control measures. The previously recommended mitigation measures for buildout of the SMF Master Plan would continue to be required to ensure compliance with SMAQMD Rules and Regulations and to minimize construction emissions. **Table 12** shows that Project construction would not exceed SMAQMD thresholds. While impacts would be considered less than significant, the Project would be subject to SMAQMD Rules described in the Regulatory Framework subsection above and required by Mitigation Measures AQ-1 through AQ-5.

Operational Emissions

Project-generated emissions would be primarily associated with motor vehicle use and area sources, such as the use of landscape maintenance equipment and architectural coatings. Operational emissions attributable to the Project are summarized in **Table 13: Cargo Facility Operational Emissions**.

As noted above, the Project's operational emissions would be associated with mobile sources (i.e., motor vehicle use), energy sources, and area sources. Each of these sources are described below.

- **Area Source Emissions.** Area source emissions would be generated due to on-site equipment, architectural coating, and landscaping that were previously not present on the site.

- **Energy Source Emissions.** Energy source emissions would be generated due to electricity usage associated with the Project. Primary uses of electricity by the Project would be for miscellaneous warehouse equipment, space heating and cooling, water heating, ventilation, lighting, appliances, and electronics.

Table 13: Cargo Facility Operational Emissions

Construction Year	Emissions (Maximum Pounds per Day)[1]					Emissions (Tons per Year)[1]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Unmitigated										
Area Source Emissions	23.80	0.00	0.10	0.00	0.00	4.34	0.00	0.01	0.00	0.00
Energy Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Emissions	62.59	121.02	459.88	117.91	32.04	7.75	21.03	72.29	20.73	5.65
Total Emissions	**86.39**	**121.02**	**459.98**	**117.92**	**32.04**	**12.09**	**21.03**	**72.94**	**20.73**	**5.65**
Threshold	*65[2]*	*65[2]*	*None[2]*	*80[2]*	*82[2]*	*25[3]*	*25[3]*	*N/A[3]*	*N/A[3]*	*100[3]*
Exceed Threshold?	**Yes**	**Yes**	**N/A**	**Yes**	**No**	**No**	**No**	**N/A**	**N/A**	**No**
Mitigated										
Area Source Emissions	23.80	0.00	0.10	0.00	0.00	4.34	0.00	0.01	0.00	0.00
Energy Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Emissions	62.62	105.77	465.35	116.48	31.56	7.75	18.11	73.41	20.48	5.57
Total Emissions	**86.42**	**93.27**	**465.45**	**116.48**	**31.56**	**12.09**	**18.11**	**73.42**	**20.48**	**5.57**
Threshold	*65[2]*	*65[2]*	*None[2]*	*80[2]*	*82[2]*	*25[3]*	*25[3]*	*N/A[3]*	*N/A[3]*	*100[3]*
Exceed Threshold?	**Yes**	**Yes**	**N/A**	**Yes**	**No**	**No**	**No**	**N/A**	**N/A**	**No**

Notes:
1. Total values are from CalEEMod and may not add up 100% due to rounding.
2. Sacramento Metropolitan Air Quality Management District, *SMAQMD Thresholds of Significance Table*, 2020.
3. United States Environmental Protection Agency, *De Minimis Tables*, updated May 27, 2020.

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

- **Mobile Sources.** Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern. NO_X and ROG react with sunlight to form O_3, known as photochemical smog. Additionally, wind currents readily transport PM_{10} and $PM_{2.5}$. However, CO tends to be a localized pollutant, dispersing rapidly at the source.

  Project-generated vehicle emissions are based on the trip generation within the Project Traffic Impact Study (Kimley-Horn, July 2020) and incorporated into CalEEMod as recommended by the SMAQMD. Based on data within the Project VMT Assessment, the Project would generate approximately 9,310 daily vehicle trips.

Total Operational Emissions

As shown in **Table 13,** the Project emissions would exceed SMAQMD thresholds for ROG, NO_X, and PM_{10}. **Table 13** shows that the majority of operational emissions would be from mobile sources. As noted in the VMT Assessment, while the cargo facility is expected to provide additional jobs and some related trips to the surrounding area, the facility itself is not expected to be the principal catalyst for new vehicle trips. Rather, it is anticipated that these trips would occur regardless of whether this location were developed as it is in response to an existing demand for goods. Accordingly, if this site were not developed, a similar site will be developed elsewhere to meet this demand and, as such, the alternative to this development would likely not eliminate related trips. Similarly, while the proposed cargo facility is expected to add trips to the region due to the increase in employment, the expected heavy vehicle trips, like passenger service, are not in response to the provision of the facility. Specifically, the demand for the goods carried by the heavy-vehicle trucks would exist irrespective of the construction of this facility.

Since the cargo facility's operational emissions would exceed SMAQMD thresholds, the Project applicant shall implement Mitigation Measures AQ-6 through AQ-8 to reduce long-term mobile emissions during operations at the proposed cargo facility. Mitigation Measure AQ-6 requires the use of model year 2010 trucks or newer and the Project applicant to provide electrical hookups, electric vehicle charging stations, and/or infrastructure (e.g., conduit and panel space) to support the future installation of truck charging stations for future zero-emission heavy-duty vehicles. Mitigation measure AQ-7 requires a Transportation Demand Management (TDM) program to facilitate the use of alternative transportation, public transit, and ridesharing as well as reduce single occupancy vehicle use by employees. Mitigation Measure AQ-8 requires the Project applicant to join and maintain a membership in the Metro Airpark Transportation Management Association (TMA) or North Natomas TMA to encourage and enhance non-single occupant vehicle use to the airport and/or in the North Natomas area. However, despite implementation of Mitigation Measures AQ-6 through AQ-8, long-term operational emissions would still exceed SMAQMD thresholds, and impacts would be significant and unavoidable.

It is noted the 2007 SMF Master Plan EIR also determined that operational emissions would exceed SMAQMD thresholds. Therefore, no new impacts would occur in this regard. However, as noted above, the proposed cargo facility would result in a significant and unavoidable impact at the project level.

Airport Master Plan Update Analysis:

Construction Emissions

Construction associated with the concourse expansion, rental car facility, and additional industrial space planned for in the Airport Master Plan Update would generate short-term emissions of criteria air pollutants. The criteria pollutant emissions would be considered a significant air quality impact if the volume of pollutants generated exceeds the SMAQMD's thresholds of significance.

Construction of the Airport Master Plan Update components would result in the temporary generation of emissions resulting from site grading, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities as well as weather conditions and the appropriate application of water.

The Airport Master Plan Update components would be built out over the long-term planning horizon of the Master Plan. However, for the purposes of this analysis, the earliest feasible (worst case) construction dates were used. Predicted maximum daily construction-generated emissions for the Project are summarized in in **Table 14: Airport Master Plan Update Construction-Related Emissions**. Future development part of the Airport Master Plan Update would be required to comply with all SMAQMD standards for construction equipment during grading activities (refer to Mitigation Measures AQ-1 and AQ-2). Additionally, construction of the proposed Project would be required to comply with various SMAQMD rules, including Rule 402 (Nuisance) and Rule 403 (Fugitive Dust) as also required by SMF Master Plan EIR Mitigation Measures AQ-1 through AQ-5. The previously recommended mitigation measures for buildout of the SMF Master Plan would continue to be required to ensure compliance with SMAQMD Rules and Regulations and to minimize construction emissions. **Table 14** shows that construction associated with the Airport Master Plan Update would exceed the SMAQMD daily NO_X threshold.

Table 14: Airport Master Plan Update Construction-Related Emissions

Construction Year	Emissions (Maximum Pounds per Day)[1,2]					Emissions (Tons per Year)[1,2]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2021	15.87	131.81	123.57	26.08	8.05	0.49	4.75	3.52	0.80	0.36
2022	622.13	126.46	131.46	29.75	8.98	21.21	13.65	12.11	2.85	0.88
Threshold	*None*[3]	*85*[3]	*None*[3]	*80*[3]	*82*[3]	*25*[4]	*25*[4]	*N/A*[4]	*N/A*[4]	*100*[4]
Exceed Threshold?	**N/A**	**Yes**	**N/A**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Notes:
5. SMAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SMAQMD CEQA Guide (Chapter 3) were applied. No mitigation was applied to construction equipment. Refer to Appendix A for Model Data Outputs.
6. Total values are from CalEEMod and may not add up 100% due to rounding.
7. Sacramento Metropolitan Air Quality Management District, *SMAQMD Thresholds of Significance Table*, 2020.
8. United States Environmental Protection Agency, *De Minimis Tables*, updated May 27, 2020.

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

Operational Emissions

Project-generated emissions would be primarily associated with motor vehicle use and area sources, such as the use of landscape maintenance equipment and architectural coatings. Operational emissions attributable to the Airport Master Plan Update are summarized in **Table 15: Airport Master Plan Update Operational Emissions**. As noted above, the Airport Master Plan Update's operational emissions would be primarily associated with mobile sources (i.e., motor vehicle use) and area sources.

Table 15: Airport Master Plan Update Operational Emissions

Construction Year	Emissions (Maximum Pounds per Day)[1]					Emissions (Tons per Year)[1]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Unmitigated										
Area Source Emissions	101.00	0.01	0.66	0.00	0.00	18.43	0.00	0.82	0.00	0.00
Energy Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Emissions	43.42	110.71	334.72	71.05	19.52	8.34	16.68	50.34	10.98	3.03

Table 15: Airport Master Plan Update Operational Emissions

Construction Year	Emissions (Maximum Pounds per Day)[1]					Emissions (Tons per Year)[1]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Total Emissions	**144.42**	**110.72**	**335.38**	**71.05**	**19.52**	**26.77**	**16.68**	**51.16**	**10.98**	**3.03**
Threshold	*65*[2]	*65*[2]	*None*[2]	*80*[2]	*82*[2]	*25*[3]	*25*[3]	*N/A*[3]	*N/A*[3]	*100*[3]
Exceed Threshold?	**Yes**	**Yes**	**N/A**	**No**	**No**	**Yes**	**No**	**N/A**	**N/A**	**No**
Mitigated										
Area Source Emissions	84.62	0.01	0.66	0.00	0.00	15.44	0.00	0.08	0.00	0.00
Energy Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Emissions	43.31	109.92	331.63	69.93	19.22	8.32	16.56	49.84	10.81	2.98
Total Emissions	**127.93**	**109.93**	**332.29**	**69.93**	**19.22**	**23.76**	**16.56**	**49.92**	**10.81**	**2.98**
Threshold	*65*[2]	*65*[2]	*None*[2]	*80*[2]	*82*[2]	*25*[3]	*25*[3]	*N/A*[3]	*N/A*[3]	*100*[3]
Exceed Threshold?	**Yes**	**Yes**	**N/A**	**No**	**No**	**Yes**	**No**	**N/A**	**N/A**	**No**

Notes:
1. Total values are from CalEEMod and may not add up 100% due to rounding.
2. Sacramento Metropolitan Air Quality Management District, *SMAQMD Thresholds of Significance Table*, 2020.
3. United States Environmental Protection Agency, *De Minimis Tables*, updated May 27, 2020.

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

As shown in **Table 15,** the Airport Master Plan's operational emissions would exceed SMAQMD thresholds for ROG and NO_X. **Table 15** shows that the majority of operational emissions would be from mobile sources. Since the Airport Master Plan's operational emissions would exceed SMAQMD thresholds, implementation of mitigation measures are required to reduce long-term operational emissions. Mitigation Measure AQ-8 requires the Project applicant to join and maintain a membership in the Metro Airpark Transportation Management Association (TMA) or North Natomas TMA to encourage and enhance non-single occupant vehicle use to the airport and/or in the North Natomas area. However, despite implementation of mitigation measures, long-term operational emissions would still exceed SMAQMD thresholds, and impacts would be significant and unavoidable.

Additionally, unmitigated annual emissions would exceed the federal de minimis threshold for ROG. Mitigation Measure AQ-9 requires the use of low VOC content paints, which would reduce ROG emissions below federal de minimis levels.

It is noted the 2007 SMF Master Plan EIR also determined that operational emissions would exceed SMAQMD thresholds. Therefore, no new impacts would occur in this regard. However, as noted above, the proposed cargo facility would result in a significant and unavoidable impact at the project level.

Cumulative Short-Term Emissions

Sacramento County is designated nonattainment for O_3 and PM_{10}, for State standards and nonattainment for O_3 and $PM_{2.5}$ for Federal standards. The SMAQMD's significance thresholds are designed to ensure compliance with both NAAQS and CAAQS and are based on an inventory of projected emissions in the SVAB. Therefore, if a project is estimated to result in emissions that do not exceed the thresholds, the project's contribution to the cumulative impact on air quality in the SVAB would not be cumulatively considerable. As discussed above, the Project's construction-related emissions by themselves would not exceed SMAQMD significance thresholds for criteria pollutants. Since these thresholds indicate whether an individual project's emissions have the potential to affect cumulative regional air quality, it can be expected that the Project-related construction emissions would not be cumulatively considerable. Compliance with SMAQMD construction-related rules would reduce cumulative impacts at a Basin-wide level. As a result, construction emissions associated with the proposed Project would not result in a cumulatively considerable contribution to significant cumulative air quality impacts.

Cumulative Long-Term Impacts

The SMAQMD has not established separate significance thresholds for cumulative operational emissions. The nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, individual project emissions contribute to existing cumulatively significant adverse air quality impacts. The SMAQMD developed the operational thresholds of significance based on the level above which individual project emissions would result in a cumulatively considerable contribution to the SVAB's existing air quality conditions. Therefore, a project that exceeds the SMAQMD operational thresholds would also be a cumulatively considerable contribution to a significant cumulative impact.

As shown in **Table 13**, Project emissions (primarily from mobile sources) would exceed the SMAQMD thresholds for ROG, NO_X, and PM_{10}. As a result, operational emissions associated with the cargo facility would potentially result in a cumulatively considerable contribution to significant cumulative air quality impacts despite implementation of Mitigation Measures AQ-6 through AQ-8. Therefore, impacts would be significant in this regard.

Airport Master Plan Update Impacts: As noted above, the SMF Master Plan Update involves airport expansion to accommodate growth over the next 20 years. However, the expansion associated with the Airport Master Plan Update would serve unmet local demand and implementation of the SMF Master Plan Update would result in a net daily VMT reduction of 486,941 vehicle miles. The reduction in VMT would occur due to the recapturing of existing longer passenger trips from the SACOG region to Bay Area airports. Although the SMF Airport Master Plan Update would result in an overall net reduction in VMT, some air districts within the SACOG region would experience a nominal increase in VMT due to the growth accommodated by the SMF Airport Master Plan Update. The emissions associated with the VMT increases and reductions by air district are shown in **Table 16: SMF Master Plan Update VMT Emissions**. As indicated in **Table 16**, the SMF Master Plan Update would result in a nominal increase in criteria pollutant emissions (<1.0 lbs/day) in the SMAQMD, Feather River AQMD, Placer County APCD, and El Dorado County AQMD, while a net decrease in emissions would occur in the Yolo-Solano AQMD. The daily emissions thresholds employed by the SMAQMD and other air districts in the SACOG region (i.e., Yolo-Solano AQMD, Feather River AQMD, Placer County APCD, and El Dorado County AQMD) would not be exceeded with implementation of the Master Plan Update; see **Table 16**. Further, as noted in the analysis under Threshold 5.1 above, the aviation emissions from the SMF Master Plan Update will also be included in the future SIPs for the Sacramento region. However, as direct Airport Master Plan emissions (emissions that do not take credit for the net daily VMT reduction) would exceed SMAQMD thresholds despite mitigation (refer to **Table 15**), impacts would be significant and unavoidable.

Table 16: SMF Master Plan Update VMT Emissions				
Source	**Net Emissions[1]**			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
SMF Master Plan VMT Emissions - SMAQMD	0.07 lbs/day	0.12 lbs/day	0.00 lbs/day	0.00 lbs/day
SMAQMD Significance Thresholds	*65 lbs/day*	*65 lbs/day*	*80 lbs/day*	*82 lbs/day*
Exceed Thresholds?	**No**	**No**	**No**	**No**
SMF Master Plan VMT Emissions – Yolo-Solano AQMD	-0.36 tons/year	-0.58 tons/year	-0.01 tons/year	-0.01 tons/year
Yolo-Solano AQMD Significance Thresholds	*10 tons/year*	*10 tons/year*	*80 lbs/day*	*N/A*
Exceed Thresholds?	**No**	**No**	**No**	**No**
SMF Master Plan VMT Emissions – Feather River AQMD	0.24 lbs/day	0.57 lbs/day	0.01 lbs/day	0.01 lbs/day
Feather River AQMD Significance Thresholds	*25 lbs/day*	*25 lbs/day*	*80 lbs/day*	*N/A*
Exceed Thresholds?	**No**	**No**	**No**	**No**
SMF Master Plan VMT Emissions – Placer County APCD	0.14 lbs/day	0.26 lbs/day	0.01 lbs/day	0.01 lbs/day
Placer County APCD Significance Thresholds	*55 lbs/day*	*55 lbs/day*	*82 lbs/day*	*82 lbs/day*
Exceed Thresholds?	**No**	**No**	**No**	**No**
SMF Master Plan VMT Emissions – El Dorado County AQMD	0.02 lbs/day	0.04 lbs/day	0.00 lbs/day	0.00 lbs/day
El Dorado County AQMD Significance Thresholds	*82 lbs/day*	*82 lbs/day*	*N/A*	*N/A*
Exceed Thresholds?	**No**	**No**	**No**	**No**

Notes:
1. Emissions were calculated using EMFAC2017 emissions rates and VMT data for each air district in the SACOG region. This VMT data differs slightly from that in the Traffic Impact Study (Kimley-Horn, July 2020) and was used for analytical purposes only.

Mitigation Measures: The adopted SMF Master Plan EIR includes measures to reduce potential impacts associated with implementation of the proposed Project. The following measures from the Final EIR are applicable to the proposed Project:

Mitigation Measures from SMF Master Plan EIR:

AQ -1 Prior to construction, SCAS will provide to the SMAQMD a work plan (i.e., Construction Period Air Quality Mitigation Plan) that includes an inventory of the heavy duty (>50 horsepower) off-road vehicles to be used in the construction projects; including owned, leased, and subcontractor vehicles. The work plan will demonstrate a Project-wide fleet average 20 percent NO_X reduction and 45 percent particulate matter reduction compared to the most recent CARB fleet average at the time of construction.

The work plan will also include a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction projects. The inventory will include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory will be updated and submitted monthly throughout the duration of the construction period, except that an inventory will not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the Project representative will provide the SMAQMD with the anticipated construction timeline including start date, and name and phone number of the Project manager and on-site foreman.

AQ-2 The SMF Master Plan construction specifications and work plan will ensure that exhaust emissions from all off-road diesel-powered equipment used on the Project site(s) does not exceed 40 percent opacity for more than three minutes in any one hour. This test will be performed by a CARB-certified visible emissions evaluator. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) will be repaired immediately, and DERA and SMAQMD will be notified within 48 hours of identification of noncompliant equipment. A visual survey of all in operation equipment will be made at least weekly, and a monthly summary of the visual survey results will be submitted throughout the duration of the Project, except that the monthly summary will not be required for any 30-day period in which no construction activity occurs. The monthly summary will include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD may conduct periodic site inspections to determine compliance. Nothing in this section will supersede other SMAQMD or state rules or regulations pertaining to exhaust emissions.

AQ-3 A portion of the Emission Reduction Credits (ERCs) received by SCAS on September 19, 2006 for the modification of aircraft fueling operations and elimination of fuel trucks trips at SMF (ERC No. ER00927) will be applied toward mitigation of NOx construction emissions associated with the Master Plan project.[9]

AQ-4 Prior to construction activities, SCAS will submit proof that an off-site air quality mitigation fee of $156,229 has been paid to the SMAQMD, and that the work plan has been approved by the SMAQMD and DERA. If differences occur in the estimated equipment list and/or construction phasing used for the EIR analysis, and what is approved in the work plan, the fee may be recalculated by the SMAQMD based on the new information.

AQ-5 The following mitigation measures will be incorporated into the work plan to minimize the generation of PM_{10} dust during construction conditions:

- Enclose, cover, or water twice daily all soil piles
- Water exposed soil with adequate frequency for continued moist soil
- Water all haul roads twice daily
- Cover loads of all haul/dump trucks securely

[9] The Air Quality Technical Appendix to the SMF Master Plan DEIR provides details on the certified ERCs and the amounts used as part of the Master Plan project.

Project-Specific Mitigation Measures:

AQ-6 The Project operator(s) shall ensure, through sale or leasing agreements, that the haul fleet consist of trucks that at a minimum meet the emissions standards of a 2010 vehicle model, and as trucks are replaced they are replaced with the newest available model. In addition, the Project shall include electrical hookups at all loading bays, and electric vehicle charging stations and/or infrastructure (e.g., conduit and panel space) to support the future installation of truck charging stations for future zero-emission heavy-duty vehicles.

AQ-7 Prior to issuance of occupancy permits, Project operator(s) shall prepare and submit a Transportation Demand Management (TDM) program detailing strategies that would reduce the use of single-occupant vehicles by employees by increasing the number of trips by walking, bicycle, carpool, vanpool, and transit. The TDM program shall include, but is not limited to, the following:

- Provide a transportation information center and on-site TDM coordinator to educate residents, employers, employees, and visitors of surrounding transportation options;
- Promote bicycling and walking through design features, such as showers for employees, self-service bicycle repair area, etc. around the Project site;
- Promote and support carpool/vanpool/rideshare use through parking incentives and administrative support, such as ride-matching service; and
- Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated parking spaces for carpool/vanpool users.

AQ-8 The proposed Project shall join and maintain membership in the Metro Airpark Transportation Management Association or North Natomas Transportation Management Association.

AQ-9 Future development projects under the Airport Master Plan Update shall use low VOC content paints that exceed the regulatory VOC limits put forth by SMAQMD's Rule 442. Low VOC paints shall be no more than 10 grams per liter (g/L) of VOC. Alternatively, the pre-painted materials that do not require the use of architectural coatings may be utilized.

Level of Significance: Significant and unavoidable impact.

Threshold 5.3	**Would the Project expose sensitive receptors to substantial pollutant concentrations?**

Summary of the 2007 SMF Master Plan Impacts: Less than significant. The adopted SMF Master Plan EIR determined that there are no sensitive receptors (i.e., schools, nursing homes, hospitals, daycare centers, etc.) adjacent to the airport.

Cargo Facility Analysis: Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

Criteria Pollutant Health Impacts

On December 24, 2018, the California Supreme Court issued an opinion identifying the need to provide sufficient information connecting a project's air emissions to health impacts or explain why such information could not be ascertained (*Sierra Club v. County of Fresno* [Friant Ranch, L.P.] [2018] Cal.5th, Case No. S219783). The Friant Ranch project was a 942-acre Specific Plan that involved a commercial master planned community of approximately 2,500 dwelling units and extensive commercial supporting development. The anticipated air quality impacts resulting from this development included significant and unavoidable emissions of multiple criteria pollutants (including significant emissions of both primary O_3 precursors [NO_X and ROGs]) at levels that exceeded the daily thresholds of significance. As noted above, implementation of the cargo facility would exceed SMAQMD daily emissions thresholds.

NO_X and ROG are precursor emissions that form O_3 in the atmosphere in the presence of sunlight where the pollutants undergo complex chemical reactions. It takes time and the influence of meteorological conditions for these reactions to occur, so O_3 may be formed at a distance downwind from the sources. Breathing ground-level O_3 can result health effects that include reduced lung function, inflammation of airways, throat irritation, pain, burning, or discomfort in the chest when taking a deep breath, chest tightness, wheezing, or shortness of breath. In addition to these effects, evidence from observational studies strongly indicates that higher daily O_3 concentrations are associated with increased asthma attacks, increased hospital admissions, increased daily mortality, and other markers of morbidity. The consistency and coherence of the evidence for effects upon asthmatics suggests that O_3 can make asthma symptoms worse and can increase sensitivity to asthma triggers.

There is currently no methodology available that can accurately quantify regional health effects from CO, NO_2 or O_3 exposure associated with an individual project's ROG or NO_X emissions. The South Coast Air Quality Management District (SCAQMD) reached a similar conclusion in its *Amicus Curiae* brief filed with the California Supreme Court in the case of *Sierra Club v. County of Fresno*, when, speaking about ozone, the SCAQMD stated that it does not know of a way to accurately quantify health impacts caused by emissions produced on a scale as small as individual projects.[10] One existing tool, U.S. EPA's Environmental Benefits Mapping and Analysis Program (BenMAP), calculates the number and economic value of air pollution-related deaths and illnesses resulting from changes in O_3 and $PM_{2.5}$ concentrations[11]. However, the expected changes in regional O_3 concentrations associated with the proposed Project would be so low that BenMAP would likely produce estimates of health effects that are near zero.

The SMAQMD prepared a Draft Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District (revised June 2020). The guidance provides screening health information for projects at

[10] SCAQMD, Application of the South Coast Air Quality Management District for Leave to File Brief of *Amicus Curiae* in Support of Neither Party and [Proposed] Brief of *Amicus Curiae*. In the Supreme Court of California. *Sierra Club v. County of Fresno*. Supreme Court Case No. S219783. April 13, 2015.

[11] U.S. EPA, Environmental Benefits Mapping and Analysis Program - Community Edition (BenMAP-CE), https://www.epa.gov/benmap. Website accessed June 2020.

or below regional CEQA thresholds of significance emissions levels and selected strategic areas above thresholds of significance emissions levels. Modeling guidance for large projects located outside strategic areas is also included.

The SMAQMD provided five potential strategic area project locations for use in the health effects screening modeling. These five locations are intended to be used as proxy locations for nearby projects exceeding the thresholds of significance. The Sacramento Strategic Area is applicable to the proposed Project. The screening modeling addressed hypothetical sources at each of the five strategic area project locations at emission levels that were two times (2x) and 8 times (8x) the maximum threshold of significance level. The SMAQMD developed a Strategic Area Projects Health Effects Screening Tool spreadsheet that can be used to estimate health effects for potential projects with emissions below the 8x threshold of significance level. The cargo facility's anticipated operational emissions (see **Table 13**) were input into the SMAQMD health effects screening tool. It should be noted that the cargo facility's operational emissions were less than the 2x threshold of significance. Based on the results of the tool, the percent of background health indices would be less than one percent (i.e., no more than 0.011 percent); refer to **Appendix A**. Therefore, the health effects associated with the cargo facility would be negligible.

Additionally, as noted above, the cargo facility is not expected to be the principal catalyst for new vehicle trips and is proposed in response to an existing demand for goods. The demand for the goods carried by the heavy-vehicle trucks would exist irrespective of the construction of this facility. Furthermore, the SMF Master Plan Update would result in a net daily VMT reduction of 486,941 vehicle miles, thereby reducing mobile source emissions in the region and reducing criterial pollutant health effects. Therefore, impacts would be less than significant in this regard.

Carbon Monoxide Hotspots

The Sacramento Valley Air Basin is attainment for CO. An analysis of CO "hot spots" is needed in nonattainment or maintenance areas to determine whether the change in the level of service (LOS) of an intersection resulting from the Project would have the potential to result in exceedances of the CAAQS or NAAQS. As the Sacramento Valley Air Basin is attainment for CO, the following discussion is provided for informational purposes.

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when vehicles are idling at intersections. Vehicle emissions standards have become increasingly stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations have steadily declined. Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard.

Emissions and ambient concentrations of CO have decreased dramatically in the SVAB with the introduction of the catalytic converter emission control technology for on-road motor vehicles in 1975 and reformulated fuels required by the 1990 Clean Air Act amendments. The Sacramento Region is currently designated as attainment for both the 1-Hour and 8-Hour state and federal standards. A maintenance plan was developed for CO in 1996. The *2004 Revision to the California State Implementation Plan for Carbon Monoxide* is the most recent SIP that addresses CO concentrations and extends the 1996 CO maintenance plan demonstration to 2018. No exceedances of the CAAQS or NAAQS for CO have been recorded at a monitoring station in Sacramento County since 1993.

The SMF Master Plan EIR had previously analyzed the maximum CO concentrations at intersections in the airport's vicinity, that would result from increased traffic from buildout of the SMF Master Plan. The analysis had analyzed intersections at Airport Boulevard/I-5, Elkhorn Boulevard/SR 99, and Elverta Road/SR 99 to determine whether airport-related traffic would result in an exceedance of CO standards when added to background CO levels. The analysis determined traffic associated with buildout of the SMF Master Plan is not expected to exceed the federal or state standards for CO at any of the receptors analyzed nor impact any sensitive receptors located within ¼-mile of these facilities.

The preliminary screening methodology provided by the SMAQMD provides lead agencies with a conservative indication of whether Project-generated vehicle trips will result in the generation of CO emissions that contribute to an exceedance of the thresholds of significance. The SMAQMD's recommended screening criteria are divided into two tiers. The screening criteria have been developed to help lead agencies analyze potential CO impacts and identify when site-specific CO dispersion modeling is not necessary.

According to the SMAQMD, a Project will result in a less than significant impact to air quality for local CO if:

- Traffic generated by the Project will not result in deterioration of intersection LOS to LOS E or F; and
- The project will not contribute to additional traffic to an intersection that already operates at LOS of E or F.

The Project would not satisfy this first tier of screening criteria. As identified in the Project VMT Assessment and Local Access, Safety, and Circulation Study, there are several intersections that would be affected by the Project such that the Project would contribute additional traffic to some intersections that already operate at LOS of E or F. Therefore, the Project would not satisfy the first tier of the SMAQMD's recommended screening criteria.

The SMAQMD guidance states that, if the first tier of screening criteria is not met, then a second tier of screening criteria shall be examined. The second tier of screening criteria is listed below. According to the SMAQMD, the Project would result in a less than significant impact to air quality for local CO if all of the following criteria are met:

- The project will not result in an affected intersection experiencing more than 31,600 vehicles per hour;
- The project will not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway; or other locations where horizontal or vertical mixing of air will be substantially limited; and
- The mix of vehicle types at the intersection is not anticipated to be substantially different from the County average (as identified by the EMFAC or CalEEMod models).

The Project meets each of these three criteria. The Project does not result in an affected intersection experiencing more than 31,600 vehicles per hour, would not contribute traffic at a location where horizontal or vertical mixing of air will be substantially limited, and the mix of vehicles types at the intersection would not be substantially different than the County average. The SMAQMD does not maintain a mass emissions threshold for Co. Therefore, since the Project passes the SMAQMD screening criteria for CO hotspots, the potential for a CO hotspot impact represents a less than significant impact.

Construction-Related Diesel Particulate Matter

Construction would result in the generation of DPM emissions from the use of off-road diesel equipment required. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e. potential exposure to TAC emission levels that exceed applicable standards). Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer.

The use of diesel-powered construction equipment would be temporary and episodic. The duration of exposure would be short and exhaust from construction equipment dissipates rapidly. Current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. The California Office of Environmental Health Hazard Assessment has not identified short-term health effects from DPM. Construction is temporary and would be transient throughout the site (i.e., move from location to location) and would not generate emissions in a fixed location for extended periods of time which would limit the exposure of any proximate individual sensitive receptor to TACs. It should be noted that there are no sensitive receptors within more than 3 miles of the Project site.

Additionally, construction is subject to and would comply with California regulations (e.g., California Code of Regulations, Title 13, Sections 2485 and 2449), which reduce diesel PM and criteria pollutant emissions from in-use off-road diesel-fueled vehicles and limit the idling of heavy-duty construction equipment to no more than five minutes. These regulations would further reduce sensitive receptors' exposure to temporary and variable DPM emissions. Given the temporary and intermittent nature of construction activities likely to occur within specific locations in the Project site (i.e., construction is not likely to occur in any one location for an extended time), the dose of DPM of any one receptor is exposed to would be limited.

In addition, the Project would be required to implement mitigation measures previously identified in the SMF Master Plan EIR to reduce typical construction-related emissions. Implementation of Mitigation Measure AQ-2 would ensure exhaust emissions from all off-road diesel-powered equipment be used on project sites do no exceed 40 percent capacity for more than three minutes in any one hour. Therefore, considering the relatively short duration of DPM-emitting construction activity at any one location and the highly dispersive properties of DPM, sensitive receptors would not be exposed to substantial concentrations of construction-related TAC emissions. Impacts would be less than significant.

Airport Master Plan Update Impacts: As noted above, the SMF Master Plan Update involves airport expansion to accommodate growth over the next 20 years and would serve unmet local demand. As implementation of the SMF Master Plan Update would result in a net daily VMT reduction of 486,941 vehicle miles due to recapturing passengers would also reduce mobile source emissions in the region, VMT and emissions in the region would result in a net decrease. Although **Table 15** shows that direct emissions associated with the Master Plan Update (emissions that do not take credit for the net daily VMT reduction) would exceed SMAQMD thresholds, these emissions are not of the magnitude to cause significant criteria pollutant health effects (refer to the Cargo Facility discussion above). Additionally, the decrease in VMT from implementation of the Airport Master Plan Update would reduce impacts to sensitive receptors. Impacts would be less than significant in this regard.

Mitigation Measures: Mitigation Measure AQ-2 from the SMF Master Plan EIR (refer to Impact Threshold 5.2, above).

Level of Significance: Less than significant impact.

Threshold 5.4	**Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

Previous SMF Master Plan EIR Significant Determination: Less than significant. The adopted SMF Master Plan EIR determined objectionable odors are not expected from the buildout of the SMF Master Plan.

Cargo Facility and Airport Master Plan Update Analysis: The SMAQMD *CEQA Guide to Air Quality Assessment* identifies certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Project would not include any of the land uses that have been identified by the SMAQMD as odor sources.

During construction-related activities, some odors (not substantial pollutant concentrations) that may be detected are those typical of construction vehicles (e.g. diesel exhaust from grading and construction equipment). These odors are a temporary short-term impact that is typical of construction projects and would disperse rapidly. The nearest sensitive receptors in the vicinity of the Project site that could be affected by odors are more than 3 miles from the proposed Project area. The Project would not include any of the land uses that have been identified by the SMAQMD as odor sources. Therefore, the Project would not create objectionable odors.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6 REFERENCES

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Appendix A

Air Quality Modeling Data

SMF Cargo Facility

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	950.00	1000sqft	21.81	950,000.00	0
Other Non-Asphalt Surfaces	41.89	Acre	41.89	1,824,728.40	0
Parking Lot	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.5 **Precipitation Freq (Days)** 58

Climate Zone 6 **Operational Year** 2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr) 343 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted per SMAQMD GHG threshold guidance

Land Use - Cargo Sort facility 900 KSF, 25 KSF ground crew bldg, 25 KSF maintenance bldg, parking/ramp footprint 14 acres (KSMF DD - 31OCT19-900sqft-V1 draft.xlsx)

Construction Phase - 16 month construction duration

Grading -

Vehicle Trips - trip rate: 9,310 daily trips / 950 (ksf)= 9.8 trip length and % based on traffic data provided, reduced trip length by 6.3% to account for 24 days of no operation.

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - Fugitive dust control

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - CEC - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Fleet Mix - based on traffic study

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tblConstructionPhase	NumDays	60.00	30.00
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tblConstructionPhase	NumDays	110.00	88.00
tblConstructionPhase	NumDays	110.00	88.00

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tblVehicleEF	LDA	0.61	0.70
tblVehicleEF	LDA	1.26	2.30
tblVehicleEF	LDA	252.52	260.95
tblVehicleEF	LDA	57.68	54.60

tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
tblVehicleEF	LDA	5.9800e-004	5.4000e-004
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
tblVehicleEF	LDA	5.0150e-003	3.0340e-003
tblVehicleEF	LDA	4.7840e-003	0.05
tblVehicleEF	LDA	0.78	0.89
tblVehicleEF	LDA	1.03	1.90
tblVehicleEF	LDA	280.47	289.33
tblVehicleEF	LDA	57.68	53.81
tblVehicleEF	LDA	0.05	0.04

tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
tblVehicleEF	LDA	5.9400e-004	5.3200e-004
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.0630e-003	2.3890e-003
tblVehicleEF	LDA	7.0460e-003	0.07
tblVehicleEF	LDA	0.58	0.66
tblVehicleEF	LDA	1.57	2.88
tblVehicleEF	LDA	245.02	253.39
tblVehicleEF	LDA	57.68	55.70
tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23

tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
tblVehicleEF	LDA	2.4540e-003	2.5070e-003
tblVehicleEF	LDA	6.0400e-004	5.5100e-004
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
tblVehicleEF	LDT1	0.01	5.4680e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10
tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
tblVehicleEF	LDT1	3.1540e-003	3.0560e-003
tblVehicleEF	LDT1	7.7500e-004	6.5100e-004
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.44
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.25	0.45
tblVehicleEF	LDT1	0.01	6.3980e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.70	1.51
tblVehicleEF	LDT1	2.71	2.06
tblVehicleEF	LDT1	346.93	337.97
tblVehicleEF	LDT1	71.71	64.83
tblVehicleEF	LDT1	0.12	0.09
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003

tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	3.4910e-003	3.3440e-003
tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
tblVehicleEF	LDT1	4.17	3.15
tblVehicleEF	LDT1	304.87	301.05
tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003

tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10

tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15

tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
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tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
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tblVehicleEF	LHD1	2.48	0.91
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tblVehicleEF	LHD1	701.67	805.90
tblVehicleEF	LHD1	31.04	10.10
tblVehicleEF	LHD1	0.09	1.09
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tblVehicleEF	LHD1	9.9400e-004	0.01
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tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
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tblVehicleEF	LHD1	3.5700e-004	1.0000e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
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tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.29	0.08
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tblVehicleEF	LHD1	2.99	1.09
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tblVehicleEF	LHD1	701.67	805.80
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tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
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tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09

tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	8.6010e-003
tblVehicleEF	LHD2	8.8820e-003	8.3040e-003
tblVehicleEF	LHD2	0.12	1.80
tblVehicleEF	LHD2	0.73	0.81
tblVehicleEF	LHD2	1.31	0.55
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.82
tblVehicleEF	LHD2	24.40	6.82
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.35	1.49
tblVehicleEF	LHD2	0.53	0.17

tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6800e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	0.01	8.7180e-003
tblVehicleEF	LHD2	8.3620e-003	7.8270e-003

tblVehicleEF	LHD2	0.12	1.80
tblVehicleEF	LHD2	0.74	0.82
tblVehicleEF	LHD2	1.20	0.51
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.84
tblVehicleEF	LHD2	24.40	6.74
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.26	1.40
tblVehicleEF	LHD2	0.50	0.16
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	3.3510e-003	0.05
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6600e-004	6.7000e-005
tblVehicleEF	LHD2	3.3510e-003	0.05

tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.14	0.16
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.7880e-003	8.4740e-003
tblVehicleEF	LHD2	9.5090e-003	8.8700e-003
tblVehicleEF	LHD2	0.12	1.80
tblVehicleEF	LHD2	0.72	0.80
tblVehicleEF	LHD2	1.44	0.61
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.80
tblVehicleEF	LHD2	24.40	6.92
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.38	1.53
tblVehicleEF	LHD2	0.57	0.19
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04

tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0110e-003	7.6850e-003
tblVehicleEF	LHD2	2.7000e-004	6.8000e-005
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003

tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78

tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94

tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03

tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66

tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09

tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
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tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07

tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
tblVehicleEF	MH	1.69	1.73
tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08

tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
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tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.5850e-003	6.6210e-003
tblVehicleEF	MHD	0.06	5.3430e-003
tblVehicleEF	MHD	0.41	5.23
tblVehicleEF	MHD	0.52	0.57
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tblVehicleEF	MHD	147.37	1,425.11
tblVehicleEF	MHD	1,210.28	1,161.69
tblVehicleEF	MHD	57.55	5.26
tblVehicleEF	MHD	0.76	13.01
tblVehicleEF	MHD	1.79	2.35
tblVehicleEF	MHD	11.25	1.48
tblVehicleEF	MHD	3.8380e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005

tblVehicleEF	MHD	3.6720e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.28
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.40	0.03
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	5.2000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.36
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.7620e-003	6.7130e-003
tblVehicleEF	MHD	0.05	5.0400e-003
tblVehicleEF	MHD	0.29	4.38
tblVehicleEF	MHD	0.53	0.58
tblVehicleEF	MHD	6.05	0.59
tblVehicleEF	MHD	156.25	1,453.84

tblVehicleEF	MHD	1,210.28	1,161.71
tblVehicleEF	MHD	57.55	5.18
tblVehicleEF	MHD	0.78	13.17
tblVehicleEF	MHD	1.67	2.20
tblVehicleEF	MHD	11.19	1.47
tblVehicleEF	MHD	3.2360e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.0960e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.03	0.27
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.37	0.03
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	5.1000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.04	0.35
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07

tblVehicleEF	MHD	0.41	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	6.5180e-003
tblVehicleEF	MHD	0.06	5.7170e-003
tblVehicleEF	MHD	0.54	6.16
tblVehicleEF	MHD	0.51	0.56
tblVehicleEF	MHD	7.31	0.71
tblVehicleEF	MHD	135.45	1,386.85
tblVehicleEF	MHD	1,210.28	1,161.68
tblVehicleEF	MHD	57.55	5.38
tblVehicleEF	MHD	0.72	12.79
tblVehicleEF	MHD	1.83	2.40
tblVehicleEF	MHD	11.33	1.48
tblVehicleEF	MHD	4.6700e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	4.4680e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.29
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	1.3050e-003	0.01

tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	5.3000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.38
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.47	0.03
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
tblVehicleEF	OBUS	0.88	1.14
tblVehicleEF	OBUS	6.77	1.47
tblVehicleEF	OBUS	128.59	1,671.65
tblVehicleEF	OBUS	1,355.95	1,492.53
tblVehicleEF	OBUS	68.41	11.11
tblVehicleEF	OBUS	0.61	8.80
tblVehicleEF	OBUS	1.94	2.02
tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.3200e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004

tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
tblVehicleEF	OBUS	0.90	1.18
tblVehicleEF	OBUS	6.09	1.32
tblVehicleEF	OBUS	135.23	1,670.58
tblVehicleEF	OBUS	1,355.95	1,492.59
tblVehicleEF	OBUS	68.41	10.86
tblVehicleEF	OBUS	0.63	8.63

tblVehicleEF	OBUS	1.81	1.87
tblVehicleEF	OBUS	2.82	1.19
tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.04	0.85
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	0.04	0.01
tblVehicleEF	OBUS	0.31	9.85
tblVehicleEF	OBUS	0.86	1.11
tblVehicleEF	OBUS	7.61	1.65
tblVehicleEF	OBUS	119.42	1,673.14
tblVehicleEF	OBUS	1,355.95	1,492.47
tblVehicleEF	OBUS	68.41	11.41
tblVehicleEF	OBUS	0.58	9.03
tblVehicleEF	OBUS	1.99	2.08
tblVehicleEF	OBUS	2.99	1.21
tblVehicleEF	OBUS	1.6800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.81
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.45	0.07
tblVehicleEF	OBUS	1.1510e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1700e-004	1.1300e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003

tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.11	0.13
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.49	0.08
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3810e-003
tblVehicleEF	SBUS	0.07	8.4610e-003
tblVehicleEF	SBUS	6.73	16.57
tblVehicleEF	SBUS	0.65	0.43
tblVehicleEF	SBUS	6.39	1.31
tblVehicleEF	SBUS	1,201.53	3,573.20
tblVehicleEF	SBUS	1,096.07	1,113.09
tblVehicleEF	SBUS	44.67	7.18
tblVehicleEF	SBUS	10.71	40.83
tblVehicleEF	SBUS	4.39	6.66
tblVehicleEF	SBUS	13.82	0.61
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003

tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.34	0.05
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.5700e-004	7.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.57
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.4430e-003
tblVehicleEF	SBUS	0.05	6.7490e-003
tblVehicleEF	SBUS	6.59	16.09
tblVehicleEF	SBUS	0.67	0.43
tblVehicleEF	SBUS	4.25	0.87
tblVehicleEF	SBUS	1,259.83	3,697.06
tblVehicleEF	SBUS	1,096.07	1,113.10
tblVehicleEF	SBUS	44.67	6.45
tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22

tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38

tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01

tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003

tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004

tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CNW_TL	6.50	85.86
tblVehicleTrips	CNW_TTP	41.00	3.33
tblVehicleTrips	CW_TL	10.00	14.02
tblVehicleTrips	CW_TTP	59.00	96.67
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.68	9.80

tblVehicleTrips	SU_TR	1.68	9.80
tblVehicleTrips	WD_TR	1.68	9.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4022	4.0169	2.9317	8.2600e-003	0.8712	0.1361	1.0073	0.3584	0.1258	0.4842	0.0000	751.8051	751.8051	0.1173	0.0000	754.7369
2022	5.2844	4.4525	4.4207	0.0157	0.8289	0.0837	0.9126	0.2245	0.0785	0.3029	0.0000	1,454.7321	1,454.7321	0.1109	0.0000	1,457.5037
Maximum	**5.2844**	**4.4525**	**4.4207**	**0.0157**	**0.8712**	**0.1361**	**1.0073**	**0.3584**	**0.1258**	**0.4842**	**0.0000**	**1,454.7321**	**1,454.7321**	**0.1173**	**0.0000**	**1,457.5037**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4022	4.0169	2.9317	8.2600e-003	0.4870	0.1361	0.6231	0.1803	0.1258	0.3060	0.0000	751.8048	751.8048	0.1173	0.0000	754.7366
2022	5.2844	4.4525	4.4207	0.0157	0.7669	0.0837	0.8506	0.2093	0.0785	0.2877	0.0000	1,454.7319	1,454.7319	0.1109	0.0000	1,457.5034
Maximum	**5.2844**	**4.4525**	**4.4207**	**0.0157**	**0.7669**	**0.1361**	**0.8506**	**0.2093**	**0.1258**	**0.3060**	**0.0000**	**1,454.7319**	**1,454.7319**	**0.1173**	**0.0000**	**1,457.5034**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**26.24**	**0.00**	**23.24**	**33.18**	**0.00**	**24.57**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2021	8-31-2021	1.4929	1.4929
2	9-1-2021	11-30-2021	1.9307	1.9307
3	12-1-2021	2-28-2022	2.6648	2.6648
4	3-1-2022	5-31-2022	2.6357	2.6357
5	6-1-2022	8-31-2022	4.0643	4.0643
6	9-1-2022	9-30-2022	1.3253	1.3253
		Highest	4.0643	4.0643

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	812.4656	812.4656	0.0687	0.0142	818.4181
Mobile	7.7504	21.0325	72.2865	0.2215	20.5379	0.1913	20.7292	5.4718	0.1795	5.6513	0.0000	20,590.0784	20,590.0784	0.6520	0.0000	20,606.3783
Waste						0.0000	0.0000		0.0000	0.0000	181.2709	0.0000	181.2709	10.7128	0.0000	449.0911
Water						0.0000	0.0000		0.0000	0.0000	77.7258	170.3026	248.0284	0.2819	0.1720	306.3346
Total	**12.0934**	**21.0326**	**72.2994**	**0.2215**	**20.5379**	**0.1913**	**20.7293**	**5.4718**	**0.1796**	**5.6513**	**258.9967**	**21,572.8715**	**21,831.8682**	**11.7155**	**0.1862**	**22,180.2487**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	800.9369	800.9369	0.0677	0.0140	806.8050
Mobile	7.7292	20.8884	71.6587	0.2192	20.3107	0.1893	20.5000	5.4112	0.1777	5.5889	0.0000	20,375.9909	20,375.9909	0.6474	0.0000	20,392.1769
Waste						0.0000	0.0000		0.0000	0.0000	90.6355	0.0000	90.6355	5.3564	0.0000	224.5455
Water						0.0000	0.0000		0.0000	0.0000	62.1806	136.2421	198.4227	0.2255	0.1376	245.0677
Total	**12.0722**	**20.8885**	**71.6716**	**0.2192**	**20.3107**	**0.1894**	**20.5000**	**5.4112**	**0.1777**	**5.5890**	**152.8161**	**21,313.1949**	**21,466.0109**	**6.2972**	**0.1516**	**21,668.6217**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.17**	**0.69**	**0.87**	**1.04**	**1.11**	**1.02**	**1.11**	**1.11**	**1.02**	**1.10**	**41.00**	**1.20**	**1.68**	**46.25**	**18.58**	**2.31**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/14/2021	5	10	
2	Site Preparation	Site Preparation	6/15/2021	7/26/2021	5	30	
3	Grading	Grading	7/27/2021	11/8/2021	5	75	
4	Building Construction	Building Construction	11/9/2021	5/31/2022	5	146	
5	Paving	Paving	6/1/2022	9/30/2022	5	88	
6	Architectural Coating	Architectural Coating	6/1/2022	9/30/2022	5	88	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 55.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,425,000; Non-Residential Outdoor: 475,000; Striped Parking Area: 146,074 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,422.00	555.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	284.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2100e-003**	**7.2100e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.7000e-004	1.9000e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4714	0.4714	1.0000e-005	0.0000	0.4717
Total	**2.6000e-004**	**1.7000e-004**	**1.9000e-003**	**1.0000e-005**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4714**	**0.4714**	**1.0000e-005**	**0.0000**	**0.4717**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2100e-003**	**7.2100e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.7000e-004	1.9000e-003	1.0000e-005	5.1000e-004	0.0000	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4714	0.4714	1.0000e-005	0.0000	0.4717
Total	**2.6000e-004**	**1.7000e-004**	**1.9000e-003**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4714**	**0.4714**	**1.0000e-005**	**0.0000**	**0.4717**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1536	50.1536	0.0162	0.0000	50.5591
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.2710**	**0.0307**	**0.3017**	**0.1490**	**0.0282**	**0.1772**	**0.0000**	**50.1536**	**50.1536**	**0.0162**	**0.0000**	**50.5591**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	6.1000e-004	6.8300e-003	2.0000e-005	1.9800e-003	1.0000e-005	2.0000e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6972	1.6972	4.0000e-005	0.0000	1.6983
Total	**9.3000e-004**	**6.1000e-004**	**6.8300e-003**	**2.0000e-005**	**1.9800e-003**	**1.0000e-005**	**2.0000e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.6972**	**1.6972**	**4.0000e-005**	**0.0000**	**1.6983**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1057	0.0000	0.1057	0.0581	0.0000	0.0581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1535	50.1535	0.0162	0.0000	50.5590
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.1057**	**0.0307**	**0.1364**	**0.0581**	**0.0282**	**0.0863**	**0.0000**	**50.1535**	**50.1535**	**0.0162**	**0.0000**	**50.5590**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	6.1000e-004	6.8300e-003	2.0000e-005	1.8300e-003	1.0000e-005	1.8400e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.6972	1.6972	4.0000e-005	0.0000	1.6983
Total	**9.3000e-004**	**6.1000e-004**	**6.8300e-003**	**2.0000e-005**	**1.8300e-003**	**1.0000e-005**	**1.8400e-003**	**4.9000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.6972**	**1.6972**	**4.0000e-005**	**0.0000**	**1.6983**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1572	1.7400	1.1579	2.3300e-003		0.0745	0.0745		0.0685	0.0685	0.0000	204.3562	204.3562	0.0661	0.0000	206.0085
Total	**0.1572**	**1.7400**	**1.1579**	**2.3300e-003**	**0.3253**	**0.0745**	**0.3997**	**0.1349**	**0.0685**	**0.2034**	**0.0000**	**204.3562**	**204.3562**	**0.0661**	**0.0000**	**206.0085**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-003	1.7000e-003	0.0190	5.0000e-005	5.5100e-003	4.0000e-005	5.5500e-003	1.4700e-003	4.0000e-005	1.5000e-003	0.0000	4.7143	4.7143	1.2000e-004	0.0000	4.7174
Total	**2.6000e-003**	**1.7000e-003**	**0.0190**	**5.0000e-005**	**5.5100e-003**	**4.0000e-005**	**5.5500e-003**	**1.4700e-003**	**4.0000e-005**	**1.5000e-003**	**0.0000**	**4.7143**	**4.7143**	**1.2000e-004**	**0.0000**	**4.7174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1269	0.0000	0.1269	0.0526	0.0000	0.0526	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1572	1.7400	1.1579	2.3300e-003		0.0745	0.0745		0.0685	0.0685	0.0000	204.3559	204.3559	0.0661	0.0000	206.0083
Total	**0.1572**	**1.7400**	**1.1579**	**2.3300e-003**	**0.1269**	**0.0745**	**0.2013**	**0.0526**	**0.0685**	**0.1211**	**0.0000**	**204.3559**	**204.3559**	**0.0661**	**0.0000**	**206.0083**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-003	1.7000e-003	0.0190	5.0000e-005	5.0800e-003	4.0000e-005	5.1200e-003	1.3600e-003	4.0000e-005	1.4000e-003	0.0000	4.7143	4.7143	1.2000e-004	0.0000	4.7174
Total	**2.6000e-003**	**1.7000e-003**	**0.0190**	**5.0000e-005**	**5.0800e-003**	**4.0000e-005**	**5.1200e-003**	**1.3600e-003**	**4.0000e-005**	**1.4000e-003**	**0.0000**	**4.7143**	**4.7143**	**1.2000e-004**	**0.0000**	**4.7174**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3399	0.3232	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	45.1693	45.1693	0.0109	0.0000	45.4417
Total	**0.0371**	**0.3399**	**0.3232**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**45.1693**	**45.1693**	**0.0109**	**0.0000**	**45.4417**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.1071	0.2959	2.6400e-003	0.0633	3.0600e-003	0.0663	0.0183	2.9300e-003	0.0212	0.0000	253.9441	253.9441	0.0145	0.0000	254.3071
Worker	0.0960	0.0628	0.7018	1.9300e-003	0.2037	1.4200e-003	0.2051	0.0542	1.3100e-003	0.0555	0.0000	174.2987	174.2987	4.5800e-003	0.0000	174.4131
Total	**0.1301**	**1.1699**	**0.9977**	**4.5700e-003**	**0.2669**	**4.4800e-003**	**0.2714**	**0.0725**	**4.2400e-003**	**0.0767**	**0.0000**	**428.2428**	**428.2428**	**0.0191**	**0.0000**	**428.7202**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3399	0.3232	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	45.1692	45.1692	0.0109	0.0000	45.4417
Total	**0.0371**	**0.3399**	**0.3232**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**45.1692**	**45.1692**	**0.0109**	**0.0000**	**45.4417**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.1071	0.2959	2.6400e-003	0.0593	3.0600e-003	0.0623	0.0173	2.9300e-003	0.0202	0.0000	253.9441	253.9441	0.0145	0.0000	254.3071
Worker	0.0960	0.0628	0.7018	1.9300e-003	0.1878	1.4200e-003	0.1892	0.0503	1.3100e-003	0.0516	0.0000	174.2987	174.2987	4.5800e-003	0.0000	174.4131
Total	**0.1301**	**1.1699**	**0.9977**	**4.5700e-003**	**0.2471**	**4.4800e-003**	**0.2515**	**0.0676**	**4.2400e-003**	**0.0718**	**0.0000**	**428.2428**	**428.2428**	**0.0191**	**0.0000**	**428.7202**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0913	0.8354	0.8754	1.4400e-003		0.0433	0.0433		0.0407	0.0407	0.0000	123.9730	123.9730	0.0297	0.0000	124.7155
Total	**0.0913**	**0.8354**	**0.8754**	**1.4400e-003**		**0.0433**	**0.0433**		**0.0407**	**0.0407**	**0.0000**	**123.9730**	**123.9730**	**0.0297**	**0.0000**	**124.7155**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0867	2.8840	0.7485	7.1800e-003	0.1736	7.3600e-003	0.1809	0.0502	7.0400e-003	0.0572	0.0000	690.5942	690.5942	0.0387	0.0000	691.5617
Worker	0.2462	0.1548	1.7694	5.1000e-003	0.5587	3.8000e-003	0.5625	0.1486	3.5100e-003	0.1521	0.0000	461.0755	461.0755	0.0113	0.0000	461.3575
Total	**0.3329**	**3.0388**	**2.5179**	**0.0123**	**0.7323**	**0.0112**	**0.7435**	**0.1988**	**0.0106**	**0.2093**	**0.0000**	**1,151.6698**	**1,151.6698**	**0.0500**	**0.0000**	**1,152.9192**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0913	0.8354	0.8754	1.4400e-003		0.0433	0.0433		0.0407	0.0407	0.0000	123.9729	123.9729	0.0297	0.0000	124.7154
Total	**0.0913**	**0.8354**	**0.8754**	**1.4400e-003**		**0.0433**	**0.0433**		**0.0407**	**0.0407**	**0.0000**	**123.9729**	**123.9729**	**0.0297**	**0.0000**	**124.7154**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0867	2.8840	0.7485	7.1800e-003	0.1626	7.3600e-003	0.1699	0.0475	7.0400e-003	0.0545	0.0000	690.5942	690.5942	0.0387	0.0000	691.5617
Worker	0.2462	0.1548	1.7694	5.1000e-003	0.5153	3.8000e-003	0.5191	0.1379	3.5100e-003	0.1414	0.0000	461.0755	461.0755	0.0113	0.0000	461.3575
Total	**0.3329**	**3.0388**	**2.5179**	**0.0123**	**0.6778**	**0.0112**	**0.6890**	**0.1854**	**0.0106**	**0.1959**	**0.0000**	**1,151.6698**	**1,151.6698**	**0.0500**	**0.0000**	**1,152.9192**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.4895	0.6415	1.0000e-003		0.0250	0.0250		0.0230	0.0230	0.0000	88.1213	88.1213	0.0285	0.0000	88.8338
Paving	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0669**	**0.4895**	**0.6415**	**1.0000e-003**		**0.0250**	**0.0250**		**0.0230**	**0.0230**	**0.0000**	**88.1213**	**88.1213**	**0.0285**	**0.0000**	**88.8338**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	1.3400e-003	0.0154	4.0000e-005	4.8500e-003	3.0000e-005	4.8800e-003	1.2900e-003	3.0000e-005	1.3200e-003	0.0000	4.0000	4.0000	1.0000e-004	0.0000	4.0025
Total	**2.1400e-003**	**1.3400e-003**	**0.0154**	**4.0000e-005**	**4.8500e-003**	**3.0000e-005**	**4.8800e-003**	**1.2900e-003**	**3.0000e-005**	**1.3200e-003**	**0.0000**	**4.0000**	**4.0000**	**1.0000e-004**	**0.0000**	**4.0025**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.4895	0.6415	1.0000e-003		0.0250	0.0250		0.0230	0.0230	0.0000	88.1212	88.1212	0.0285	0.0000	88.8337
Paving	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0669**	**0.4895**	**0.6415**	**1.0000e-003**		**0.0250**	**0.0250**		**0.0230**	**0.0230**	**0.0000**	**88.1212**	**88.1212**	**0.0285**	**0.0000**	**88.8337**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	1.3400e-003	0.0154	4.0000e-005	4.4700e-003	3.0000e-005	4.5000e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	4.0000	4.0000	1.0000e-004	0.0000	4.0025
Total	**2.1400e-003**	**1.3400e-003**	**0.0154**	**4.0000e-005**	**4.4700e-003**	**3.0000e-005**	**4.5000e-003**	**1.2000e-003**	**3.0000e-005**	**1.2300e-003**	**0.0000**	**4.0000**	**4.0000**	**1.0000e-004**	**0.0000**	**4.0025**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-003	0.0620	0.0798	1.3000e-004		3.6000e-003	3.6000e-003		3.6000e-003	3.6000e-003	0.0000	11.2343	11.2343	7.3000e-004	0.0000	11.2526
Total	**4.7508**	**0.0620**	**0.0798**	**1.3000e-004**		**3.6000e-003**	**3.6000e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**11.2343**	**11.2343**	**7.3000e-004**	**0.0000**	**11.2526**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0254	0.2906	8.4000e-004	0.0918	6.2000e-004	0.0924	0.0244	5.8000e-004	0.0250	0.0000	75.7338	75.7338	1.8500e-003	0.0000	75.7801
Total	**0.0404**	**0.0254**	**0.2906**	**8.4000e-004**	**0.0918**	**6.2000e-004**	**0.0924**	**0.0244**	**5.8000e-004**	**0.0250**	**0.0000**	**75.7338**	**75.7338**	**1.8500e-003**	**0.0000**	**75.7801**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-003	0.0620	0.0798	1.3000e-004		3.6000e-003	3.6000e-003		3.6000e-003	3.6000e-003	0.0000	11.2343	11.2343	7.3000e-004	0.0000	11.2526
Total	**4.7508**	**0.0620**	**0.0798**	**1.3000e-004**		**3.6000e-003**	**3.6000e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**11.2343**	**11.2343**	**7.3000e-004**	**0.0000**	**11.2526**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0254	0.2906	8.4000e-004	0.0846	6.2000e-004	0.0853	0.0227	5.8000e-004	0.0232	0.0000	75.7338	75.7338	1.8500e-003	0.0000	75.7801
Total	**0.0404**	**0.0254**	**0.2906**	**8.4000e-004**	**0.0846**	**6.2000e-004**	**0.0853**	**0.0227**	**5.8000e-004**	**0.0232**	**0.0000**	**75.7338**	**75.7338**	**1.8500e-003**	**0.0000**	**75.7801**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.7292	20.8884	71.6587	0.2192	20.3107	0.1893	20.5000	5.4112	0.1777	5.5889	0.0000	20,375.9909	20,375.9909	0.6474	0.0000	20,392.1769
Unmitigated	7.7504	21.0325	72.2865	0.2215	20.5379	0.1913	20.7292	5.4718	0.1795	5.6513	0.0000	20,590.0784	20,590.0784	0.6520	0.0000	20,606.3783

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	9,310.00	9,310.00	9310.00	55,618,564	55,003,110
Total	9,310.00	9,310.00	9,310.00	55,618,564	55,003,110

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	14.02	0.00	85.86	96.67	0.00	3.33	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Parking Lot	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.578841	0.038733	0.206173	0.118029	0.019040	0.000000	0.000000	0.033300	0.000000	0.000000	0.005884	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	800.9369	800.9369	0.0677	0.0140	806.8050
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	812.4656	812.4656	0.0687	0.0142	818.4181
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	638655	99.3633	8.4000e-003	1.7400e-003	100.0913
Parking Lot	213444	33.2081	2.8100e-003	5.8000e-004	33.4514
Unrefrigerated Warehouse-No Rail	4.37e+006	679.8941	0.0575	0.0119	684.8754
Total		**812.4656**	**0.0687**	**0.0142**	**818.4181**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	638655	99.3633	8.4000e-003	1.7400e-003	100.0913
Parking Lot	213444	33.2081	2.8100e-003	5.8000e-004	33.4514
Unrefrigerated Warehouse-No Rail	4.2959e+006	668.3655	0.0565	0.0117	673.2623
Total		**800.9369**	**0.0677**	**0.0140**	**806.8050**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Unmitigated	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-003	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Total	**4.3430**	**1.2000e-004**	**0.0129**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0250**	**0.0250**	**7.0000e-005**	**0.0000**	**0.0266**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-003	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Total	**4.3430**	**1.2000e-004**	**0.0129**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0250**	**0.0250**	**7.0000e-005**	**0.0000**	**0.0266**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	198.4227	0.2255	0.1376	245.0677
Unmitigated	248.0284	0.2819	0.1720	306.3346

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	219.688 / 0	248.0284	0.2819	0.1720	306.3346
Total		**248.0284**	**0.2819**	**0.1720**	**306.3346**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	175.75 / 0	198.4227	0.2255	0.1376	245.0677
Total		**198.4227**	**0.2255**	**0.1376**	**245.0677**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	90.6355	5.3564	0.0000	224.5455
Unmitigated	181.2709	10.7128	0.0000	449.0911

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	893	181.2709	10.7128	0.0000	449.0911
Total		**181.2709**	**10.7128**	**0.0000**	**449.0911**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	446.5	90.6355	5.3564	0.0000	224.5455
Total		**90.6355**	**5.3564**	**0.0000**	**224.5455**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Cargo Facility

Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	950.00	1000sqft	21.81	950,000.00	0
Other Non-Asphalt Surfaces	41.89	Acre	41.89	1,824,728.40	0
Parking Lot	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.5 **Precipitation Freq (Days)** 58

Climate Zone 6 **Operational Year** 2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr) 343 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted per SMAQMD GHG threshold guidance

Land Use - Cargo Sort facility 900 KSF, 25 KSF ground crew bldg, 25 KSF maintenance bldg, parking/ramp footprint 14 acres (KSMF DD - 31OCT19-900sqft-V1 draft.xlsx)

Construction Phase - 16 month construction duration

Grading -

Vehicle Trips - trip rate: 9,310 daily trips / 950 (ksf)= 9.8 trip length and % based on traffic data provided, reduced trip length by 6.3% to account for 24 days of no operation.

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - Fugitive dust control

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - CEC - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Fleet Mix - based on traffic study

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	60.00	30.00
tblConstructionPhase	NumDays	155.00	75.00
tblConstructionPhase	NumDays	1,550.00	146.00
tblConstructionPhase	NumDays	110.00	88.00
tblConstructionPhase	NumDays	110.00	88.00

tblEnergyUse	LightingElect	0.00	0.35
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	T24NG	0.49	0.00
tblFleetMix	HHD	0.02	0.03
tblFleetMix	LDA	0.56	0.58
tblFleetMix	LHD2	5.2450e-003	0.00
tblFleetMix	MH	8.6500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0310e-003	0.00
tblFleetMix	SBUS	6.1900e-004	0.00
tblFleetMix	UBUS	2.0540e-003	0.00
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.18
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	48.11
tblVehicleEF	HHD	1.02	0.46
tblVehicleEF	HHD	3.28	1.8300e-003
tblVehicleEF	HHD	4,159.31	9,153.87
tblVehicleEF	HHD	1,651.06	1,538.11
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tblVehicleEF	HHD	22.32	53.94
tblVehicleEF	HHD	3.36	3.68
tblVehicleEF	HHD	19.79	2.45
tblVehicleEF	HHD	0.04	0.05
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04

tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.05
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
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tblVehicleEF	HHD	8.3000e-005	1.0000e-006
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tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
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tblVehicleEF	HHD	0.10	0.00

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tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
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tblVehicleEF	HHD	0.02	0.01
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tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.04	0.06

tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
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tblVehicleEF	HHD	8.9700e-004	6.8200e-004
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tblVehicleEF	LDA	0.02	0.01
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tblVehicleEF	LDA	0.08	0.56
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tblVehicleEF	LDA	0.09	0.23

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tblVehicleEF	LDA	0.11	0.12
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tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
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tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
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tblVehicleEF	LDT1	0.25	0.45
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tblVehicleEF	LDT1	0.17	0.27
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tblVehicleEF	LDT1	3.4480e-003	2.6080e-003

tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
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tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
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tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10

tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15

tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
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tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07

tblVehicleEF	LHD1	2.48	0.91
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.90
tblVehicleEF	LHD1	31.04	10.10
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
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tblVehicleEF	LHD1	3.5700e-004	1.0000e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10

tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
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tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
tblVehicleEF	LHD1	31.04	10.41
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
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tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09

tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	8.6010e-003
tblVehicleEF	LHD2	8.8820e-003	8.3040e-003
tblVehicleEF	LHD2	0.12	1.80
tblVehicleEF	LHD2	0.73	0.81
tblVehicleEF	LHD2	1.31	0.55
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.82
tblVehicleEF	LHD2	24.40	6.82
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.35	1.49
tblVehicleEF	LHD2	0.53	0.17

tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6800e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	0.01	8.7180e-003
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tblVehicleEF	LHD2	0.74	0.82
tblVehicleEF	LHD2	1.20	0.51
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.84
tblVehicleEF	LHD2	24.40	6.74
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tblVehicleEF	LHD2	1.26	1.40
tblVehicleEF	LHD2	0.50	0.16
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tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	3.3510e-003	0.05
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6600e-004	6.7000e-005
tblVehicleEF	LHD2	3.3510e-003	0.05

tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.14	0.16
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
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tblVehicleEF	LHD2	9.5090e-003	8.8700e-003
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tblVehicleEF	LHD2	720.74	795.80
tblVehicleEF	LHD2	24.40	6.92
tblVehicleEF	LHD2	0.11	1.55
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tblVehicleEF	LHD2	0.57	0.19
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04

tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0110e-003	7.6850e-003
tblVehicleEF	LHD2	2.7000e-004	6.8000e-005
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003

tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78

tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94

tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03

tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66

tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09

tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
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tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07

tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
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tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08

tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
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tblVehicleEF	MHD	11.25	1.48
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tblVehicleEF	MHD	7.7800e-004	6.1000e-005

tblVehicleEF	MHD	3.6720e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
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tblVehicleEF	MHD	0.04	0.28
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.40	0.03
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	5.2000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.36
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.7620e-003	6.7130e-003
tblVehicleEF	MHD	0.05	5.0400e-003
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tblVehicleEF	MHD	6.05	0.59
tblVehicleEF	MHD	156.25	1,453.84

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tblVehicleEF	MHD	11.19	1.47
tblVehicleEF	MHD	3.2360e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.0960e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.03	0.27
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.37	0.03
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
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tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.04	0.35
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07

tblVehicleEF	MHD	0.41	0.03
tblVehicleEF	MHD	0.02	0.04
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tblVehicleEF	MHD	4.4680e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.29
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	1.3050e-003	0.01

tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	5.3000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
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tblVehicleEF	MHD	0.05	0.38
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
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tblVehicleEF	MHD	0.03	0.08
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tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
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tblVehicleEF	OBUS	2.89	1.20
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tblVehicleEF	OBUS	1.3200e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004

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tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
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tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
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tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
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tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
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tblVehicleEF	OBUS	0.01	0.01
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tblVehicleEF	OBUS	0.01	0.01

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tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
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tblVehicleEF	OBUS	0.06	1.02
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tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
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tblVehicleEF	SBUS	1,096.07	1,113.10
tblVehicleEF	SBUS	44.67	6.45
tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22

tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38

tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01

tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003

tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004

tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CNW_TL	6.50	85.86
tblVehicleTrips	CNW_TTP	41.00	3.33
tblVehicleTrips	CW_TL	10.00	14.02
tblVehicleTrips	CW_TTP	59.00	96.67
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.68	9.80

tblVehicleTrips	SU_TR	1.68	9.80
tblVehicleTrips	WD_TR	1.68	9.80

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	9.3153	76.0940	73.3493	0.2734	18.2032	2.0454	20.2486	9.9670	1.8818	11.8488	0.0000	27,964.7196	27,964.7196	1.9469	0.0000	28,007.1991
2022	110.6104	71.2367	68.6545	0.2681	14.1563	1.0140	15.1704	3.8302	0.9548	4.7850	0.0000	27,448.2230	27,448.2230	1.6429	0.0000	27,489.2956
Maximum	**110.6104**	**76.0940**	**73.3493**	**0.2734**	**18.2032**	**2.0454**	**20.2486**	**9.9670**	**1.8818**	**11.8488**	**0.0000**	**27,964.7196**	**27,964.7196**	**1.9469**	**0.0000**	**28,007.1991**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	9.3153	76.0940	73.3493	0.2734	13.0961	2.0454	14.2806	3.9067	1.8818	5.7884	0.0000	27,964.7196	27,964.7196	1.9469	0.0000	28,007.1991
2022	110.6104	71.2367	68.6545	0.2681	13.0957	1.0140	14.1097	3.5699	0.9548	4.5246	0.0000	27,448.2230	27,448.2230	1.6429	0.0000	27,489.2956
Maximum	**110.6104**	**76.0940**	**73.3493**	**0.2734**	**13.0961**	**2.0454**	**14.2806**	**3.9067**	**1.8818**	**5.7884**	**0.0000**	**27,964.7196**	**27,964.7196**	**1.9469**	**0.0000**	**28,007.1991**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.06**	**0.00**	**19.84**	**45.81**	**0.00**	**38.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	62.5901	109.2029	459.8757	1.3085	116.8585	1.0474	117.9059	31.0497	0.9829	32.0326		133,941.3460	133,941.3460	3.9154		134,039.2319
Total	**86.3902**	**109.2039**	**459.9785**	**1.3085**	**116.8585**	**1.0477**	**117.9062**	**31.0497**	**0.9832**	**32.0329**		**133,941.5661**	**133,941.5661**	**3.9160**	**0.0000**	**134,039.4666**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	62.4676	108.4689	455.6246	1.2948	115.5654	1.0366	116.6020	30.7061	0.9728	31.6789		132,542.2906	132,542.2906	3.8859		132,639.4373
Total	**86.2677**	**108.4699**	**455.7275**	**1.2948**	**115.5654**	**1.0370**	**116.6023**	**30.7061**	**0.9731**	**31.6793**		**132,542.5108**	**132,542.5108**	**3.8865**	**0.0000**	**132,639.6720**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.14	0.67	0.92	1.05	1.11	1.03	1.11	1.11	1.03	1.10	0.00	1.04	1.04	0.76	0.00	1.04

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/14/2021	5	10	
2	Site Preparation	Site Preparation	6/15/2021	7/26/2021	5	30	
3	Grading	Grading	7/27/2021	11/8/2021	5	75	
4	Building Construction	Building Construction	11/9/2021	5/31/2022	5	146	
5	Paving	Paving	6/1/2022	9/30/2022	5	88	
6	Architectural Coating	Architectural Coating	6/1/2022	9/30/2022	5	88	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 55.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,425,000; Non-Residential Outdoor: 475,000; Striped Parking Area: 146,074 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,422.00	555.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	284.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**		**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0308	0.4487	1.1500e-003	0.1141	7.7000e-004	0.1149	0.0303	7.1000e-004	0.0310		114.9719	114.9719	3.0600e-003		115.0483
Total	**0.0601**	**0.0308**	**0.4487**	**1.1500e-003**	**0.1141**	**7.7000e-004**	**0.1149**	**0.0303**	**7.1000e-004**	**0.0310**		**114.9719**	**114.9719**	**3.0600e-003**		**115.0483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**	**0.0000**	**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0308	0.4487	1.1500e-003	0.1052	7.7000e-004	0.1060	0.0281	7.1000e-004	0.0288		114.9719	114.9719	3.0600e-003		115.0483
Total	**0.0601**	**0.0308**	**0.4487**	**1.1500e-003**	**0.1052**	**7.7000e-004**	**0.1060**	**0.0281**	**7.1000e-004**	**0.0288**		**114.9719**	**114.9719**	**3.0600e-003**		**115.0483**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0721	0.0369	0.5385	1.3900e-003	0.1369	9.2000e-004	0.1379	0.0363	8.5000e-004	0.0372		137.9662	137.9662	3.6700e-003		138.0580
Total	**0.0721**	**0.0369**	**0.5385**	**1.3900e-003**	**0.1369**	**9.2000e-004**	**0.1379**	**0.0363**	**8.5000e-004**	**0.0372**		**137.9662**	**137.9662**	**3.6700e-003**		**138.0580**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**7.0458**	**2.0445**	**9.0903**	**3.8730**	**1.8809**	**5.7539**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0721	0.0369	0.5385	1.3900e-003	0.1262	9.2000e-004	0.1271	0.0337	8.5000e-004	0.0345		137.9662	137.9662	3.6700e-003		138.0580
Total	**0.0721**	**0.0369**	**0.5385**	**1.3900e-003**	**0.1262**	**9.2000e-004**	**0.1271**	**0.0337**	**8.5000e-004**	**0.0345**		**137.9662**	**137.9662**	**3.6700e-003**		**138.0580**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0802	0.0410	0.5983	1.5400e-003	0.1521	1.0300e-003	0.1532	0.0404	9.5000e-004	0.0413		153.2958	153.2958	4.0800e-003		153.3978
Total	**0.0802**	**0.0410**	**0.5983**	**1.5400e-003**	**0.1521**	**1.0300e-003**	**0.1532**	**0.0404**	**9.5000e-004**	**0.0413**		**153.2958**	**153.2958**	**4.0800e-003**		**153.3978**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.3826**	**1.9853**	**5.3679**	**1.4026**	**1.8265**	**3.2292**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0802	0.0410	0.5983	1.5400e-003	0.1402	1.0300e-003	0.1413	0.0374	9.5000e-004	0.0384		153.2958	153.2958	4.0800e-003		153.3978
Total	**0.0802**	**0.0410**	**0.5983**	**1.5400e-003**	**0.1402**	**1.0300e-003**	**0.1413**	**0.0374**	**9.5000e-004**	**0.0384**		**153.2958**	**153.2958**	**4.0800e-003**		**153.3978**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7151	55.7444	14.2344	0.1370	3.3396	0.1529	3.4925	0.9610	0.1462	1.1072		14,512.0238	14,512.0238	0.7931		14,531.8522
Worker	5.6993	2.9174	42.5397	0.1095	10.8171	0.0730	10.8902	2.8694	0.0673	2.9366		10,899.3319	10,899.3319	0.2900		10,906.5826
Total	**7.4144**	**58.6619**	**56.7741**	**0.2465**	**14.1567**	**0.2259**	**14.3826**	**3.8303**	**0.2135**	**4.0439**		**25,411.3557**	**25,411.3557**	**1.0832**		**25,438.4348**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7151	55.7444	14.2344	0.1370	3.1250	0.1529	3.2779	0.9083	0.1462	1.0545		14,512.02 38	14,512.02 38	0.7931		14,531.85 22
Worker	5.6993	2.9174	42.5397	0.1095	9.9711	0.0730	10.0441	2.6617	0.0673	2.7290		10,899.33 19	10,899.33 19	0.2900		10,906.58 26
Total	**7.4144**	**58.6619**	**56.7741**	**0.2465**	**13.0961**	**0.2259**	**13.3220**	**3.5700**	**0.2135**	**3.7835**		**25,411.35 57**	**25,411.35 57**	**1.0832**		**25,438.43 48**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5914	52.9971	13.1151	0.1357	3.3392	0.1339	3.4731	0.9608	0.1281	1.0889		14,385.4341	14,385.4341	0.7703		14,404.6906
Worker	5.3198	2.6239	39.1760	0.1055	10.8171	0.0711	10.8883	2.8694	0.0655	2.9349		10,508.4554	10,508.4554	0.2607		10,514.9728
Total	**6.9111**	**55.6210**	**52.2911**	**0.2412**	**14.1563**	**0.2050**	**14.3614**	**3.8302**	**0.1936**	**4.0238**		**24,893.8895**	**24,893.8895**	**1.0310**		**24,919.6634**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5914	52.9971	13.1151	0.1357	3.1246	0.1339	3.2585	0.9082	0.1281	1.0362		14,385.4341	14,385.4341	0.7703		14,404.6906
Worker	5.3198	2.6239	39.1760	0.1055	9.9711	0.0711	10.0422	2.6617	0.0655	2.7272		10,508.4554	10,508.4554	0.2607		10,514.9728
Total	**6.9111**	**55.6210**	**52.2911**	**0.2412**	**13.0957**	**0.2050**	**13.3007**	**3.5699**	**0.1936**	**3.7634**		**24,893.8895**	**24,893.8895**	**1.0310**		**24,919.6634**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.4168					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5196**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0277	0.4133	1.1100e-003	0.1141	7.5000e-004	0.1149	0.0303	6.9000e-004	0.0310		110.8487	110.8487	2.7500e-003		110.9174
Total	**0.0561**	**0.0277**	**0.4133**	**1.1100e-003**	**0.1141**	**7.5000e-004**	**0.1149**	**0.0303**	**6.9000e-004**	**0.0310**		**110.8487**	**110.8487**	**2.7500e-003**		**110.9174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	0.4168					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5196**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0277	0.4133	1.1100e-003	0.1052	7.5000e-004	0.1059	0.0281	6.9000e-004	0.0288		110.8487	110.8487	2.7500e-003		110.9174
Total	**0.0561**	**0.0277**	**0.4133**	**1.1100e-003**	**0.1052**	**7.5000e-004**	**0.1059**	**0.0281**	**6.9000e-004**	**0.0288**		**110.8487**	**110.8487**	**2.7500e-003**		**110.9174**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	107.7677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**107.9722**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	1.0625	0.5240	7.8242	0.0211	2.1604	0.0142	2.1746	0.5731	0.0131	0.5862		2,098.735 1	2,098.735 1	0.0521		2,100.036 8
Total	**1.0625**	**0.5240**	**7.8242**	**0.0211**	**2.1604**	**0.0142**	**2.1746**	**0.5731**	**0.0131**	**0.5862**		**2,098.735 1**	**2,098.735 1**	**0.0521**		**2,100.036 8**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	107.7677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**107.9722**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	1.0625	0.5240	7.8242	0.0211	1.9914	0.0142	2.0056	0.5316	0.0131	0.5447		2,098.735 1	2,098.735 1	0.0521		2,100.036 8
Total	**1.0625**	**0.5240**	**7.8242**	**0.0211**	**1.9914**	**0.0142**	**2.0056**	**0.5316**	**0.0131**	**0.5447**		**2,098.735 1**	**2,098.735 1**	**0.0521**		**2,100.036 8**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	62.4676	108.4689	455.6246	1.2948	115.5654	1.0366	116.6020	30.7061	0.9728	31.6789		132,542.2906	132,542.2906	3.8859		132,639.4373
Unmitigated	62.5901	109.2029	459.8757	1.3085	116.8585	1.0474	117.9059	31.0497	0.9829	32.0326		133,941.3460	133,941.3460	3.9154		134,039.2319

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	9,310.00	9,310.00	9310.00	55,618,564	55,003,110
Total	9,310.00	9,310.00	9,310.00	55,618,564	55,003,110

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	14.02	0.00	85.86	96.67	0.00	3.33	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Parking Lot	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.578841	0.038733	0.206173	0.118029	0.019040	0.000000	0.000000	0.033300	0.000000	0.000000	0.005884	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Unmitigated	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.5982					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5700e-003	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Total	**23.8001**	**9.4000e-004**	**0.1029**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2201**	**0.2201**	**5.8000e-004**		**0.2347**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.5982					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5700e-003	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Total	**23.8001**	**9.4000e-004**	**0.1029**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2201**	**0.2201**	**5.8000e-004**		**0.2347**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Cargo Facility

Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	950.00	1000sqft	21.81	950,000.00	0
Other Non-Asphalt Surfaces	41.89	Acre	41.89	1,824,728.40	0
Parking Lot	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr)	343	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted per SMAQMD GHG threshold guidance

Land Use - Cargo Sort facility 900 KSF, 25 KSF ground crew bldg, 25 KSF maintenance bldg, parking/ramp footprint 14 acres (KSMF DD - 31OCT19-900sqft-V1 draft.xlsx)

Construction Phase - 16 month construction duration

Grading -

Vehicle Trips - trip rate: 9,310 daily trips / 950 (ksf)= 9.8 trip length and % based on traffic data provided, reduced trip length by 6.3% to account for 24 days of no operation.

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - Fugitive dust control

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - CEC - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Fleet Mix - based on traffic study

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	60.00	30.00
tblConstructionPhase	NumDays	155.00	75.00
tblConstructionPhase	NumDays	1,550.00	146.00
tblConstructionPhase	NumDays	110.00	88.00
tblConstructionPhase	NumDays	110.00	88.00

tblEnergyUse	LightingElect	0.00	0.35
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	T24NG	0.49	0.00
tblFleetMix	HHD	0.02	0.03
tblFleetMix	LDA	0.56	0.58
tblFleetMix	LHD2	5.2450e-003	0.00
tblFleetMix	MH	8.6500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0310e-003	0.00
tblFleetMix	SBUS	6.1900e-004	0.00
tblFleetMix	UBUS	2.0540e-003	0.00
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.18
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	48.11
tblVehicleEF	HHD	1.02	0.46
tblVehicleEF	HHD	3.28	1.8300e-003
tblVehicleEF	HHD	4,159.31	9,153.87
tblVehicleEF	HHD	1,651.06	1,538.11
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tblVehicleEF	HHD	22.32	53.94
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tblVehicleEF	HHD	0.04	0.05
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04

tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.05
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
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tblVehicleEF	HHD	0.63	3.57
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
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tblVehicleEF	HHD	7.2000e-005	2.7000e-005
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tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.10	0.00

tblVehicleEF	HHD	1.77	47.02
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tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
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tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.4500e-004	6.7700e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
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tblVehicleEF	HHD	0.12	0.00
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tblVehicleEF	HHD	3.43	3.75
tblVehicleEF	HHD	19.81	2.45
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.04	0.06

tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.3000e-005	1.3000e-005
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tblVehicleEF	HHD	1.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.5200e-004	0.00
tblVehicleEF	HHD	4.3000e-005	1.3000e-005
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tblVehicleEF	HHD	0.78	3.83
tblVehicleEF	HHD	1.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.11	1.0000e-006
tblVehicleEF	LDA	4.2860e-003	2.5680e-003
tblVehicleEF	LDA	5.8650e-003	0.06
tblVehicleEF	LDA	0.61	0.70
tblVehicleEF	LDA	1.26	2.30
tblVehicleEF	LDA	252.52	260.95
tblVehicleEF	LDA	57.68	54.60

tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
tblVehicleEF	LDA	5.9800e-004	5.4000e-004
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
tblVehicleEF	LDA	5.0150e-003	3.0340e-003
tblVehicleEF	LDA	4.7840e-003	0.05
tblVehicleEF	LDA	0.78	0.89
tblVehicleEF	LDA	1.03	1.90
tblVehicleEF	LDA	280.47	289.33
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tblVehicleEF	LDA	0.05	0.04

tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
tblVehicleEF	LDA	5.9400e-004	5.3200e-004
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.0630e-003	2.3890e-003
tblVehicleEF	LDA	7.0460e-003	0.07
tblVehicleEF	LDA	0.58	0.66
tblVehicleEF	LDA	1.57	2.88
tblVehicleEF	LDA	245.02	253.39
tblVehicleEF	LDA	57.68	55.70
tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23

tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
tblVehicleEF	LDA	2.4540e-003	2.5070e-003
tblVehicleEF	LDA	6.0400e-004	5.5100e-004
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
tblVehicleEF	LDT1	0.01	5.4680e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10
tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
tblVehicleEF	LDT1	3.1540e-003	3.0560e-003
tblVehicleEF	LDT1	7.7500e-004	6.5100e-004
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.44
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.25	0.45
tblVehicleEF	LDT1	0.01	6.3980e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.70	1.51
tblVehicleEF	LDT1	2.71	2.06
tblVehicleEF	LDT1	346.93	337.97
tblVehicleEF	LDT1	71.71	64.83
tblVehicleEF	LDT1	0.12	0.09
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003

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tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	3.4910e-003	3.3440e-003
tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
tblVehicleEF	LDT1	4.17	3.15
tblVehicleEF	LDT1	304.87	301.05
tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003

tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10

tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15

tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07

tblVehicleEF	LHD1	2.48	0.91
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.90
tblVehicleEF	LHD1	31.04	10.10
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8590e-003
tblVehicleEF	LHD1	3.5700e-004	1.0000e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10

tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
tblVehicleEF	LHD1	31.04	10.41
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09

tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	8.6010e-003
tblVehicleEF	LHD2	8.8820e-003	8.3040e-003
tblVehicleEF	LHD2	0.12	1.80
tblVehicleEF	LHD2	0.73	0.81
tblVehicleEF	LHD2	1.31	0.55
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.82
tblVehicleEF	LHD2	24.40	6.82
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.35	1.49
tblVehicleEF	LHD2	0.53	0.17

tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6800e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	0.01	8.7180e-003
tblVehicleEF	LHD2	8.3620e-003	7.8270e-003

tblVehicleEF	LHD2	0.12	1.80
tblVehicleEF	LHD2	0.74	0.82
tblVehicleEF	LHD2	1.20	0.51
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.84
tblVehicleEF	LHD2	24.40	6.74
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.26	1.40
tblVehicleEF	LHD2	0.50	0.16
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	3.3510e-003	0.05
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6600e-004	6.7000e-005
tblVehicleEF	LHD2	3.3510e-003	0.05

tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.14	0.16
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.7880e-003	8.4740e-003
tblVehicleEF	LHD2	9.5090e-003	8.8700e-003
tblVehicleEF	LHD2	0.12	1.80
tblVehicleEF	LHD2	0.72	0.80
tblVehicleEF	LHD2	1.44	0.61
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.80
tblVehicleEF	LHD2	24.40	6.92
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.38	1.53
tblVehicleEF	LHD2	0.57	0.19
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04

tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0110e-003	7.6850e-003
tblVehicleEF	LHD2	2.7000e-004	6.8000e-005
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003

tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78

tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94

tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03

tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66

tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
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tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09

tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
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tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07

tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
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tblVehicleEF	MH	1.69	1.73
tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08

tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
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tblVehicleEF	MHD	7.5850e-003	6.6210e-003
tblVehicleEF	MHD	0.06	5.3430e-003
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tblVehicleEF	MHD	147.37	1,425.11
tblVehicleEF	MHD	1,210.28	1,161.69
tblVehicleEF	MHD	57.55	5.26
tblVehicleEF	MHD	0.76	13.01
tblVehicleEF	MHD	1.79	2.35
tblVehicleEF	MHD	11.25	1.48
tblVehicleEF	MHD	3.8380e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005

tblVehicleEF	MHD	3.6720e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.28
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.40	0.03
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	5.2000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.36
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.7620e-003	6.7130e-003
tblVehicleEF	MHD	0.05	5.0400e-003
tblVehicleEF	MHD	0.29	4.38
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tblVehicleEF	MHD	6.05	0.59
tblVehicleEF	MHD	156.25	1,453.84

tblVehicleEF	MHD	1,210.28	1,161.71
tblVehicleEF	MHD	57.55	5.18
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tblVehicleEF	MHD	1.67	2.20
tblVehicleEF	MHD	11.19	1.47
tblVehicleEF	MHD	3.2360e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.0960e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.03	0.27
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.37	0.03
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	5.1000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.04	0.35
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07

tblVehicleEF	MHD	0.41	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	6.5180e-003
tblVehicleEF	MHD	0.06	5.7170e-003
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tblVehicleEF	MHD	0.51	0.56
tblVehicleEF	MHD	7.31	0.71
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tblVehicleEF	MHD	57.55	5.38
tblVehicleEF	MHD	0.72	12.79
tblVehicleEF	MHD	1.83	2.40
tblVehicleEF	MHD	11.33	1.48
tblVehicleEF	MHD	4.6700e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	4.4680e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.29
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	1.3050e-003	0.01

tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	5.3000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.38
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.47	0.03
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
tblVehicleEF	OBUS	0.88	1.14
tblVehicleEF	OBUS	6.77	1.47
tblVehicleEF	OBUS	128.59	1,671.65
tblVehicleEF	OBUS	1,355.95	1,492.53
tblVehicleEF	OBUS	68.41	11.11
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tblVehicleEF	OBUS	1.94	2.02
tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.3200e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004

tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
tblVehicleEF	OBUS	0.90	1.18
tblVehicleEF	OBUS	6.09	1.32
tblVehicleEF	OBUS	135.23	1,670.58
tblVehicleEF	OBUS	1,355.95	1,492.59
tblVehicleEF	OBUS	68.41	10.86
tblVehicleEF	OBUS	0.63	8.63

tblVehicleEF	OBUS	1.81	1.87
tblVehicleEF	OBUS	2.82	1.19
tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.04	0.85
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	0.04	0.01
tblVehicleEF	OBUS	0.31	9.85
tblVehicleEF	OBUS	0.86	1.11
tblVehicleEF	OBUS	7.61	1.65
tblVehicleEF	OBUS	119.42	1,673.14
tblVehicleEF	OBUS	1,355.95	1,492.47
tblVehicleEF	OBUS	68.41	11.41
tblVehicleEF	OBUS	0.58	9.03
tblVehicleEF	OBUS	1.99	2.08
tblVehicleEF	OBUS	2.99	1.21
tblVehicleEF	OBUS	1.6800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.81
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.45	0.07
tblVehicleEF	OBUS	1.1510e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1700e-004	1.1300e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003

tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.11	0.13
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.49	0.08
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3810e-003
tblVehicleEF	SBUS	0.07	8.4610e-003
tblVehicleEF	SBUS	6.73	16.57
tblVehicleEF	SBUS	0.65	0.43
tblVehicleEF	SBUS	6.39	1.31
tblVehicleEF	SBUS	1,201.53	3,573.20
tblVehicleEF	SBUS	1,096.07	1,113.09
tblVehicleEF	SBUS	44.67	7.18
tblVehicleEF	SBUS	10.71	40.83
tblVehicleEF	SBUS	4.39	6.66
tblVehicleEF	SBUS	13.82	0.61
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003

tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.34	0.05
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.5700e-004	7.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.57
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.4430e-003
tblVehicleEF	SBUS	0.05	6.7490e-003
tblVehicleEF	SBUS	6.59	16.09
tblVehicleEF	SBUS	0.67	0.43
tblVehicleEF	SBUS	4.25	0.87
tblVehicleEF	SBUS	1,259.83	3,697.06
tblVehicleEF	SBUS	1,096.07	1,113.10
tblVehicleEF	SBUS	44.67	6.45
tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22

tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38

tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01

tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003

tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004

tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CNW_TL	6.50	85.86
tblVehicleTrips	CNW_TTP	41.00	3.33
tblVehicleTrips	CW_TL	10.00	14.02
tblVehicleTrips	CW_TTP	59.00	96.67
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.68	9.80

tblVehicleTrips	SU_TR	1.68	9.80
tblVehicleTrips	WD_TR	1.68	9.80

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	8.9662	77.6966	69.3680	0.2565	18.2032	2.0454	20.2486	9.9670	1.8818	11.8488	0.0000	26,264.4992	26,264.4992	1.9464	0.0000	26,307.7503
2022	110.5239	72.6294	64.8613	0.2518	14.1563	1.0228	15.1791	3.8302	0.9632	4.7933	0.0000	25,797.1002	25,797.1002	1.6753	0.0000	25,838.9823
Maximum	**110.5239**	**77.6966**	**69.3680**	**0.2565**	**18.2032**	**2.0454**	**20.2486**	**9.9670**	**1.8818**	**11.8488**	**0.0000**	**26,264.4992**	**26,264.4992**	**1.9464**	**0.0000**	**26,307.7503**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	8.9662	77.6966	69.3680	0.2565	13.0961	2.0454	14.2901	3.9067	1.8818	5.7884	0.0000	26,264.4992	26,264.4992	1.9464	0.0000	26,307.7503
2022	110.5239	72.6294	64.8613	0.2518	13.0957	1.0228	14.1185	3.5699	0.9632	4.5330	0.0000	25,797.1002	25,797.1002	1.6753	0.0000	25,838.9823
Maximum	**110.5239**	**77.6966**	**69.3680**	**0.2565**	**13.0961**	**2.0454**	**14.2901**	**3.9067**	**1.8818**	**5.7884**	**0.0000**	**26,264.4992**	**26,264.4992**	**1.9464**	**0.0000**	**26,307.7503**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.06**	**0.00**	**19.81**	**45.81**	**0.00**	**37.98**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	35.5755	121.0211	402.1576	1.1951	116.8585	1.0588	117.9173	31.0497	0.9938	32.0435		122,472.5392	122,472.5392	4.1400		122,576.0381
Total	**59.3757**	**121.0220**	**402.2604**	**1.1951**	**116.8585**	**1.0592**	**117.9176**	**31.0497**	**0.9942**	**32.0439**		**122,472.7594**	**122,472.7594**	**4.1405**	**0.0000**	**122,576.2727**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	35.4585	120.1895	398.8099	1.1827	115.5654	1.0480	116.6134	30.7061	0.9837	31.6898		121,201.1457	121,201.1457	4.1127		121,303.9642
Total	**59.2587**	**120.1905**	**398.9127**	**1.1827**	**115.5654**	**1.0484**	**116.6138**	**30.7061**	**0.9841**	**31.6902**		**121,201.3659**	**121,201.3659**	**4.1133**	**0.0000**	**121,304.1988**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.20	0.69	0.83	1.04	1.11	1.02	1.11	1.11	1.02	1.10	0.00	1.04	1.04	0.66	0.00	1.04

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/14/2021	5	10	
2	Site Preparation	Site Preparation	6/15/2021	7/26/2021	5	30	
3	Grading	Grading	7/27/2021	11/8/2021	5	75	
4	Building Construction	Building Construction	11/9/2021	5/31/2022	5	146	
5	Paving	Paving	6/1/2022	9/30/2022	5	88	
6	Architectural Coating	Architectural Coating	6/1/2022	9/30/2022	5	88	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 55.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,425,000; Non-Residential Outdoor: 475,000; Striped Parking Area: 146,074 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,422.00	555.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	284.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0380	0.3827	1.0100e-003	0.1141	7.7000e-004	0.1149	0.0303	7.1000e-004	0.0310		100.9746	100.9746	2.6900e-003		101.0419
Total	**0.0554**	**0.0380**	**0.3827**	**1.0100e-003**	**0.1141**	**7.7000e-004**	**0.1149**	**0.0303**	**7.1000e-004**	**0.0310**		**100.9746**	**100.9746**	**2.6900e-003**		**101.0419**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0380	0.3827	1.0100e-003	0.1052	7.7000e-004	0.1060	0.0281	7.1000e-004	0.0288		100.9746	100.9746	2.6900e-003		101.0419
Total	**0.0554**	**0.0380**	**0.3827**	**1.0100e-003**	**0.1052**	**7.7000e-004**	**0.1060**	**0.0281**	**7.1000e-004**	**0.0288**		**100.9746**	**100.9746**	**2.6900e-003**		**101.0419**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0664	0.0456	0.4593	1.2200e-003	0.1369	9.2000e-004	0.1379	0.0363	8.5000e-004	0.0372		121.1696	121.1696	3.2300e-003		121.2503
Total	**0.0664**	**0.0456**	**0.4593**	**1.2200e-003**	**0.1369**	**9.2000e-004**	**0.1379**	**0.0363**	**8.5000e-004**	**0.0372**		**121.1696**	**121.1696**	**3.2300e-003**		**121.2503**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**7.0458**	**2.0445**	**9.0903**	**3.8730**	**1.8809**	**5.7539**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0664	0.0456	0.4593	1.2200e-003	0.1262	9.2000e-004	0.1271	0.0337	8.5000e-004	0.0345		121.1696	121.1696	3.2300e-003		121.2503
Total	**0.0664**	**0.0456**	**0.4593**	**1.2200e-003**	**0.1262**	**9.2000e-004**	**0.1271**	**0.0337**	**8.5000e-004**	**0.0345**		**121.1696**	**121.1696**	**3.2300e-003**		**121.2503**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0738	0.0507	0.5103	1.3500e-003	0.1521	1.0300e-003	0.1532	0.0404	9.5000e-004	0.0413		134.6329	134.6329	3.5900e-003		134.7226
Total	**0.0738**	**0.0507**	**0.5103**	**1.3500e-003**	**0.1521**	**1.0300e-003**	**0.1532**	**0.0404**	**9.5000e-004**	**0.0413**		**134.6329**	**134.6329**	**3.5900e-003**		**134.7226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.3826**	**1.9853**	**5.3679**	**1.4026**	**1.8265**	**3.2292**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0738	0.0507	0.5103	1.3500e-003	0.1402	1.0300e-003	0.1413	0.0374	9.5000e-004	0.0384		134.6329	134.6329	3.5900e-003		134.7226
Total	**0.0738**	**0.0507**	**0.5103**	**1.3500e-003**	**0.1402**	**1.0300e-003**	**0.1413**	**0.0374**	**9.5000e-004**	**0.0384**		**134.6329**	**134.6329**	**3.5900e-003**		**134.7226**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8169	56.6613	16.5088	0.1335	3.3396	0.1624	3.5020	0.9610	0.1553	1.1163		14,138.7397	14,138.7397	0.8589		14,160.2130
Worker	5.2484	3.6033	36.2841	0.0961	10.8171	0.0730	10.8902	2.8694	0.0673	2.9366		9,572.3956	9,572.3956	0.2551		9,578.7730
Total	**7.0653**	**60.2645**	**52.7928**	**0.2296**	**14.1567**	**0.2354**	**14.3921**	**3.8303**	**0.2226**	**4.0529**		**23,711.1353**	**23,711.1353**	**1.1140**		**23,738.9860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8169	56.6613	16.5088	0.1335	3.1250	0.1624	3.2874	0.9083	0.1553	1.0636		14,138.7397	14,138.7397	0.8589		14,160.2130
Worker	5.2484	3.6033	36.2841	0.0961	9.9711	0.0730	10.0441	2.6617	0.0673	2.7290		9,572.3956	9,572.3956	0.2551		9,578.7730
Total	**7.0653**	**60.2645**	**52.7928**	**0.2296**	**13.0961**	**0.2354**	**13.3315**	**3.5700**	**0.2226**	**3.7926**		**23,711.1353**	**23,711.1353**	**1.1140**		**23,738.9860**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6862	53.7744	15.2252	0.1322	3.3392	0.1427	3.4819	0.9608	0.1365	1.0973		14,013.111 1	14,013.111 1	0.8346		14,033.97 49
Worker	4.9082	3.2394	33.2728	0.0927	10.8171	0.0711	10.8883	2.8694	0.0655	2.9349		9,229.655 5	9,229.655 5	0.2288		9,235.375 2
Total	**6.5944**	**57.0138**	**48.4979**	**0.2249**	**14.1563**	**0.2138**	**14.3701**	**3.8302**	**0.2020**	**4.0322**		**23,242.76 66**	**23,242.76 66**	**1.0633**		**23,269.35 01**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6862	53.7744	15.2252	0.1322	3.1246	0.1427	3.2672	0.9082	0.1365	1.0446		14,013.1111	14,013.1111	0.8346		14,033.9749
Worker	4.9082	3.2394	33.2728	0.0927	9.9711	0.0711	10.0422	2.6617	0.0655	2.7272		9,229.6555	9,229.6555	0.2288		9,235.3752
Total	**6.5944**	**57.0138**	**48.4979**	**0.2249**	**13.0957**	**0.2138**	**13.3095**	**3.5699**	**0.2020**	**3.7718**		**23,242.7666**	**23,242.7666**	**1.0633**		**23,269.3501**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.4168					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5196**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0518	0.0342	0.3510	9.8000e-004	0.1141	7.5000e-004	0.1149	0.0303	6.9000e-004	0.0310		97.3592	97.3592	2.4100e-003		97.4196
Total	**0.0518**	**0.0342**	**0.3510**	**9.8000e-004**	**0.1141**	**7.5000e-004**	**0.1149**	**0.0303**	**6.9000e-004**	**0.0310**		**97.3592**	**97.3592**	**2.4100e-003**		**97.4196**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.4168					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5196**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0518	0.0342	0.3510	9.8000e-004	0.1052	7.5000e-004	0.1059	0.0281	6.9000e-004	0.0288		97.3592	97.3592	2.4100e-003		97.4196
Total	**0.0518**	**0.0342**	**0.3510**	**9.8000e-004**	**0.1052**	**7.5000e-004**	**0.1059**	**0.0281**	**6.9000e-004**	**0.0288**		**97.3592**	**97.3592**	**2.4100e-003**		**97.4196**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	107.7677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**107.9722**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.9803	0.6470	6.6452	0.0185	2.1604	0.0142	2.1746	0.5731	0.0131	0.5862		1,843.334 9	1,843.334 9	0.0457		1,844.477 2
Total	**0.9803**	**0.6470**	**6.6452**	**0.0185**	**2.1604**	**0.0142**	**2.1746**	**0.5731**	**0.0131**	**0.5862**		**1,843.334 9**	**1,843.334 9**	**0.0457**		**1,844.477 2**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	107.7677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**107.9722**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.9803	0.6470	6.6452	0.0185	1.9914	0.0142	2.0056	0.5316	0.0131	0.5447		1,843.334 9	1,843.334 9	0.0457		1,844.477 2
Total	**0.9803**	**0.6470**	**6.6452**	**0.0185**	**1.9914**	**0.0142**	**2.0056**	**0.5316**	**0.0131**	**0.5447**		**1,843.334 9**	**1,843.334 9**	**0.0457**		**1,844.477 2**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	35.4585	120.1895	398.8099	1.1827	115.5654	1.0480	116.6134	30.7061	0.9837	31.6898		121,201.1457	121,201.1457	4.1127		121,303.9642
Unmitigated	35.5755	121.0211	402.1576	1.1951	116.8585	1.0588	117.9173	31.0497	0.9938	32.0435		122,472.5392	122,472.5392	4.1400		122,576.0381

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	9,310.00	9,310.00	9310.00	55,618,564	55,003,110
Total	9,310.00	9,310.00	9,310.00	55,618,564	55,003,110

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	14.02	0.00	85.86	96.67	0.00	3.33	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Parking Lot	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.578841	0.038733	0.206173	0.118029	0.019040	0.000000	0.000000	0.033300	0.000000	0.000000	0.005884	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Unmitigated	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.5982					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5700e-003	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Total	**23.8001**	**9.4000e-004**	**0.1029**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2201**	**0.2201**	**5.8000e-004**		**0.2347**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.5982					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5700e-003	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Total	**23.8001**	**9.4000e-004**	**0.1029**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2201**	**0.2201**	**5.8000e-004**		**0.2347**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Cargo Facility - Mitigated

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	950.00	1000sqft	21.81	950,000.00	0
Other Non-Asphalt Surfaces	41.89	Acre	41.89	1,824,728.40	0
Parking Lot	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr)	343	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted per SMAQMD GHG threshold guidance

Land Use - Cargo Sort facility 900 KSF, 25 KSF ground crew bldg, 25 KSF maintenance bldg, parking/ramp footprint 14 acres (KSMF DD - 31OCT19-900sqft-V1 draft.xlsx)

Construction Phase - 16 month construction duration

Grading -

Vehicle Trips - trip rate: 9,310 daily trips / 950 (ksf)= 9.8 trip length and % based on traffic data provided, reduced trip length by 6.3% to account for 24 days of no operation.

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - Fugitive dust control

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - CEC - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Fleet Mix - based on traffic study

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	60.00	30.00
tblConstructionPhase	NumDays	155.00	75.00
tblConstructionPhase	NumDays	1,550.00	146.00
tblConstructionPhase	NumDays	110.00	88.00
tblConstructionPhase	NumDays	110.00	88.00

tblEnergyUse	LightingElect	0.00	0.35
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	T24NG	0.49	0.00
tblFleetMix	HHD	0.02	0.03
tblFleetMix	LDA	0.56	0.58
tblFleetMix	LHD2	5.2450e-003	0.00
tblFleetMix	MH	8.6500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0310e-003	0.00
tblFleetMix	SBUS	6.1900e-004	0.00
tblFleetMix	UBUS	2.0540e-003	0.00
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.22
tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	63.58
tblVehicleEF	HHD	1.02	0.37
tblVehicleEF	HHD	3.28	3.4500e-003
tblVehicleEF	HHD	4,159.31	10,790.13
tblVehicleEF	HHD	1,651.06	1,442.00
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	22.32	52.48
tblVehicleEF	HHD	3.36	2.37
tblVehicleEF	HHD	19.79	2.86
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04

tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
tblVehicleEF	HHD	1.5300e-004	3.0000e-006
tblVehicleEF	HHD	5.4300e-003	3.0000e-006
tblVehicleEF	HHD	0.63	4.36
tblVehicleEF	HHD	7.2000e-005	1.0000e-006
tblVehicleEF	HHD	0.11	0.03
tblVehicleEF	HHD	8.2400e-004	8.0000e-006
tblVehicleEF	HHD	0.09	2.0000e-006
tblVehicleEF	HHD	0.04	0.10
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	3.0000e-006
tblVehicleEF	HHD	5.4300e-003	3.0000e-006
tblVehicleEF	HHD	0.72	45.89
tblVehicleEF	HHD	7.2000e-005	1.0000e-006
tblVehicleEF	HHD	0.20	0.07
tblVehicleEF	HHD	8.2400e-004	8.0000e-006
tblVehicleEF	HHD	0.10	2.0000e-006
tblVehicleEF	HHD	0.57	0.23
tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.10	0.00

tblVehicleEF	HHD	1.77	62.65
tblVehicleEF	HHD	1.03	0.37
tblVehicleEF	HHD	3.02	3.1780e-003
tblVehicleEF	HHD	4,406.18	10,671.93
tblVehicleEF	HHD	1,651.06	1,442.00
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	23.04	50.03
tblVehicleEF	HHD	3.15	2.22
tblVehicleEF	HHD	19.77	2.86
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
tblVehicleEF	HHD	4.0400e-004	8.0000e-006
tblVehicleEF	HHD	6.4540e-003	5.0000e-006
tblVehicleEF	HHD	0.59	4.61
tblVehicleEF	HHD	1.9500e-004	3.0000e-006
tblVehicleEF	HHD	0.11	0.03
tblVehicleEF	HHD	8.4500e-004	8.0000e-006
tblVehicleEF	HHD	0.09	2.0000e-006
tblVehicleEF	HHD	0.04	0.10

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	4.0400e-004	8.0000e-006
tblVehicleEF	HHD	6.4540e-003	5.0000e-006
tblVehicleEF	HHD	0.68	48.53
tblVehicleEF	HHD	1.9500e-004	3.0000e-006
tblVehicleEF	HHD	0.20	0.07
tblVehicleEF	HHD	8.4500e-004	8.0000e-006
tblVehicleEF	HHD	0.10	2.0000e-006
tblVehicleEF	HHD	0.65	0.20
tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	HHD	3.34	64.86
tblVehicleEF	HHD	1.01	0.37
tblVehicleEF	HHD	3.67	3.8240e-003
tblVehicleEF	HHD	3,818.40	10,953.35
tblVehicleEF	HHD	1,651.06	1,442.00
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	21.33	55.85
tblVehicleEF	HHD	3.43	2.41
tblVehicleEF	HHD	19.81	2.86
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.04	0.02

tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
tblVehicleEF	HHD	4.3000e-005	1.0000e-006
tblVehicleEF	HHD	5.5610e-003	3.0000e-006
tblVehicleEF	HHD	0.68	4.01
tblVehicleEF	HHD	1.6000e-005	0.00
tblVehicleEF	HHD	0.11	0.03
tblVehicleEF	HHD	8.9700e-004	9.0000e-006
tblVehicleEF	HHD	0.10	2.0000e-006
tblVehicleEF	HHD	0.04	0.10
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.5200e-004	0.00
tblVehicleEF	HHD	4.3000e-005	1.0000e-006
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tblVehicleEF	HHD	0.78	42.26
tblVehicleEF	HHD	1.6000e-005	0.00
tblVehicleEF	HHD	0.20	0.07
tblVehicleEF	HHD	8.9700e-004	9.0000e-006
tblVehicleEF	HHD	0.11	3.0000e-006
tblVehicleEF	LDA	4.2860e-003	2.5680e-003
tblVehicleEF	LDA	5.8650e-003	0.06
tblVehicleEF	LDA	0.61	0.70
tblVehicleEF	LDA	1.26	2.30
tblVehicleEF	LDA	252.52	260.95
tblVehicleEF	LDA	57.68	54.60

tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
tblVehicleEF	LDA	5.9800e-004	5.4000e-004
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
tblVehicleEF	LDA	5.0150e-003	3.0340e-003
tblVehicleEF	LDA	4.7840e-003	0.05
tblVehicleEF	LDA	0.78	0.89
tblVehicleEF	LDA	1.03	1.90
tblVehicleEF	LDA	280.47	289.33
tblVehicleEF	LDA	57.68	53.81
tblVehicleEF	LDA	0.05	0.04

tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
tblVehicleEF	LDA	5.9400e-004	5.3200e-004
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.0630e-003	2.3890e-003
tblVehicleEF	LDA	7.0460e-003	0.07
tblVehicleEF	LDA	0.58	0.66
tblVehicleEF	LDA	1.57	2.88
tblVehicleEF	LDA	245.02	253.39
tblVehicleEF	LDA	57.68	55.70
tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23

tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
tblVehicleEF	LDA	2.4540e-003	2.5070e-003
tblVehicleEF	LDA	6.0400e-004	5.5100e-004
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
tblVehicleEF	LDT1	0.01	5.4680e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10
tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
tblVehicleEF	LDT1	3.1540e-003	3.0560e-003
tblVehicleEF	LDT1	7.7500e-004	6.5100e-004
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.44
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.25	0.45
tblVehicleEF	LDT1	0.01	6.3980e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.70	1.51
tblVehicleEF	LDT1	2.71	2.06
tblVehicleEF	LDT1	346.93	337.97
tblVehicleEF	LDT1	71.71	64.83
tblVehicleEF	LDT1	0.12	0.09
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003

tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	3.4910e-003	3.3440e-003
tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
tblVehicleEF	LDT1	4.17	3.15
tblVehicleEF	LDT1	304.87	301.05
tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003

tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10

tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15

tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07

tblVehicleEF	LHD1	2.48	0.91
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.90
tblVehicleEF	LHD1	31.04	10.10
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8590e-003
tblVehicleEF	LHD1	3.5700e-004	1.0000e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10

tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
tblVehicleEF	LHD1	31.04	10.41
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09

tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	4.6680e-003
tblVehicleEF	LHD2	8.8820e-003	3.4690e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.73	0.37
tblVehicleEF	LHD2	1.31	0.40
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.74
tblVehicleEF	LHD2	24.40	5.96
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.35	0.14
tblVehicleEF	LHD2	0.53	0.11

tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003
tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	3.7610e-003
tblVehicleEF	LHD2	0.04	5.1620e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	5.6200e-004	1.7130e-003
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.12	0.01
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0120e-003	7.2570e-003
tblVehicleEF	LHD2	2.6800e-004	5.9000e-005
tblVehicleEF	LHD2	1.3190e-003	3.7610e-003
tblVehicleEF	LHD2	0.04	5.1620e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	5.6200e-004	1.7130e-003
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.13	0.02
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	0.01	4.6960e-003

tblVehicleEF	LHD2	8.3620e-003	3.2670e-003
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tblVehicleEF	LHD2	0.74	0.37
tblVehicleEF	LHD2	1.20	0.37
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.75
tblVehicleEF	LHD2	24.40	5.91
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.26	0.13
tblVehicleEF	LHD2	0.50	0.10
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003
tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	3.3510e-003	9.6940e-003
tblVehicleEF	LHD2	0.05	6.8880e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	1.4060e-003	4.5050e-003
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.11	0.01
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0120e-003	7.2570e-003

tblVehicleEF	LHD2	2.6600e-004	5.8000e-005
tblVehicleEF	LHD2	3.3510e-003	9.6940e-003
tblVehicleEF	LHD2	0.05	6.8880e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	1.4060e-003	4.5050e-003
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.12	0.01
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.7880e-003	4.6370e-003
tblVehicleEF	LHD2	9.5090e-003	3.7040e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.72	0.37
tblVehicleEF	LHD2	1.44	0.44
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.74
tblVehicleEF	LHD2	24.40	6.03
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.38	0.14
tblVehicleEF	LHD2	0.57	0.11
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003

tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	4.0000e-004	1.1050e-003
tblVehicleEF	LHD2	0.04	5.0690e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	1.5100e-004	4.2500e-004
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.10	0.02
tblVehicleEF	LHD2	0.13	0.02
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0110e-003	7.2570e-003
tblVehicleEF	LHD2	2.7000e-004	6.0000e-005
tblVehicleEF	LHD2	4.0000e-004	1.1050e-003
tblVehicleEF	LHD2	0.04	5.0690e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	1.5100e-004	4.2500e-004
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.10	0.02
tblVehicleEF	LHD2	0.14	0.02
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003

tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003

tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003

tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003

tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31

tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18

tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11

tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004

tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
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tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03

tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.16	0.11
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.5850e-003	9.0600e-004
tblVehicleEF	MHD	0.06	3.4050e-003
tblVehicleEF	MHD	0.41	5.42
tblVehicleEF	MHD	0.52	0.13
tblVehicleEF	MHD	6.57	0.32
tblVehicleEF	MHD	147.37	1,172.79
tblVehicleEF	MHD	1,210.28	1,109.36
tblVehicleEF	MHD	57.55	3.89
tblVehicleEF	MHD	0.76	5.38
tblVehicleEF	MHD	1.79	1.37
tblVehicleEF	MHD	11.25	1.96

tblVehicleEF	MHD	3.8380e-003	1.3080e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	3.6720e-003	1.2520e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	1.5080e-003	1.6610e-003
tblVehicleEF	MHD	0.05	2.5350e-003
tblVehicleEF	MHD	0.04	0.21
tblVehicleEF	MHD	6.3200e-004	7.7500e-004
tblVehicleEF	MHD	0.07	0.01
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.40	0.02
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	3.9000e-005
tblVehicleEF	MHD	1.5080e-003	1.6610e-003
tblVehicleEF	MHD	0.05	2.5350e-003
tblVehicleEF	MHD	0.05	4.16
tblVehicleEF	MHD	6.3200e-004	7.7500e-004
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.43	0.02
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	7.7620e-003	9.1900e-004
tblVehicleEF	MHD	0.05	3.2200e-003
tblVehicleEF	MHD	0.29	4.84

tblVehicleEF	MHD	0.53	0.13
tblVehicleEF	MHD	6.05	0.29
tblVehicleEF	MHD	156.25	1,162.65
tblVehicleEF	MHD	1,210.28	1,109.36
tblVehicleEF	MHD	57.55	3.85
tblVehicleEF	MHD	0.78	5.14
tblVehicleEF	MHD	1.67	1.28
tblVehicleEF	MHD	11.19	1.96
tblVehicleEF	MHD	3.2360e-003	1.1620e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	3.0960e-003	1.1120e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	3.9020e-003	4.2360e-003
tblVehicleEF	MHD	0.07	3.2940e-003
tblVehicleEF	MHD	0.03	0.20
tblVehicleEF	MHD	1.6400e-003	1.9810e-003
tblVehicleEF	MHD	0.07	0.01
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.37	0.01
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	3.8000e-005
tblVehicleEF	MHD	3.9020e-003	4.2360e-003
tblVehicleEF	MHD	0.07	3.2940e-003
tblVehicleEF	MHD	0.04	3.97

tblVehicleEF	MHD	1.6400e-003	1.9810e-003
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.41	0.02
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	8.9100e-004
tblVehicleEF	MHD	0.06	3.6350e-003
tblVehicleEF	MHD	0.54	6.03
tblVehicleEF	MHD	0.51	0.13
tblVehicleEF	MHD	7.31	0.35
tblVehicleEF	MHD	135.45	1,187.91
tblVehicleEF	MHD	1,210.28	1,109.35
tblVehicleEF	MHD	57.55	3.95
tblVehicleEF	MHD	0.72	5.73
tblVehicleEF	MHD	1.83	1.39
tblVehicleEF	MHD	11.33	1.96
tblVehicleEF	MHD	4.6700e-003	1.5090e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	4.4680e-003	1.4440e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	4.3200e-004	5.1000e-004
tblVehicleEF	MHD	0.05	2.4900e-003
tblVehicleEF	MHD	0.04	0.21
tblVehicleEF	MHD	1.5900e-004	2.0100e-004
tblVehicleEF	MHD	0.07	0.01

tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.43	0.02
tblVehicleEF	MHD	1.3050e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	3.9000e-005
tblVehicleEF	MHD	4.3200e-004	5.1000e-004
tblVehicleEF	MHD	0.05	2.4900e-003
tblVehicleEF	MHD	0.05	4.32
tblVehicleEF	MHD	1.5900e-004	2.0100e-004
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.47	0.02
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
tblVehicleEF	OBUS	0.88	1.14
tblVehicleEF	OBUS	6.77	1.47
tblVehicleEF	OBUS	128.59	1,671.65
tblVehicleEF	OBUS	1,355.95	1,492.53
tblVehicleEF	OBUS	68.41	11.11
tblVehicleEF	OBUS	0.61	8.80
tblVehicleEF	OBUS	1.94	2.02
tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004

tblVehicleEF	OBUS	1.3200e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
tblVehicleEF	OBUS	0.90	1.18
tblVehicleEF	OBUS	6.09	1.32
tblVehicleEF	OBUS	135.23	1,670.58

tblVehicleEF	OBUS	1,355.95	1,492.59
tblVehicleEF	OBUS	68.41	10.86
tblVehicleEF	OBUS	0.63	8.63
tblVehicleEF	OBUS	1.81	1.87
tblVehicleEF	OBUS	2.82	1.19
tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.04	0.85
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17

tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	0.01
tblVehicleEF	OBUS	0.31	9.85
tblVehicleEF	OBUS	0.86	1.11
tblVehicleEF	OBUS	7.61	1.65
tblVehicleEF	OBUS	119.42	1,673.14
tblVehicleEF	OBUS	1,355.95	1,492.47
tblVehicleEF	OBUS	68.41	11.41
tblVehicleEF	OBUS	0.58	9.03
tblVehicleEF	OBUS	1.99	2.08
tblVehicleEF	OBUS	2.99	1.21
tblVehicleEF	OBUS	1.6800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.81
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.45	0.07
tblVehicleEF	OBUS	1.1510e-003	0.02

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1700e-004	1.1300e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.11	0.13
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.49	0.08
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3810e-003
tblVehicleEF	SBUS	0.07	8.4610e-003
tblVehicleEF	SBUS	6.73	16.57
tblVehicleEF	SBUS	0.65	0.43
tblVehicleEF	SBUS	6.39	1.31
tblVehicleEF	SBUS	1,201.53	3,573.20
tblVehicleEF	SBUS	1,096.07	1,113.09
tblVehicleEF	SBUS	44.67	7.18
tblVehicleEF	SBUS	10.71	40.83
tblVehicleEF	SBUS	4.39	6.66
tblVehicleEF	SBUS	13.82	0.61
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003

tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.34	0.05
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.5700e-004	7.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.57
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.4430e-003
tblVehicleEF	SBUS	0.05	6.7490e-003
tblVehicleEF	SBUS	6.59	16.09
tblVehicleEF	SBUS	0.67	0.43
tblVehicleEF	SBUS	4.25	0.87
tblVehicleEF	SBUS	1,259.83	3,697.06
tblVehicleEF	SBUS	1,096.07	1,113.10

tblVehicleEF	SBUS	44.67	6.45
tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22
tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13

tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11

tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003

tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004

tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08

tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CNW_TL	6.50	85.86
tblVehicleTrips	CNW_TTP	41.00	3.33
tblVehicleTrips	CW_TL	10.00	14.02
tblVehicleTrips	CW_TTP	59.00	96.67
tblVehicleTrips	DV_TP	5.00	0.00

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.68	9.80
tblVehicleTrips	SU_TR	1.68	9.80
tblVehicleTrips	WD_TR	1.68	9.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4022	4.0169	2.9317	8.2600e-003	0.8712	0.1361	1.0073	0.3584	0.1258	0.4842	0.0000	751.8051	751.8051	0.1173	0.0000	754.7369
2022	5.2844	4.4525	4.4207	0.0157	0.8289	0.0837	0.9126	0.2245	0.0785	0.3029	0.0000	1,454.7321	1,454.7321	0.1109	0.0000	1,457.5037
Maximum	**5.2844**	**4.4525**	**4.4207**	**0.0157**	**0.8712**	**0.1361**	**1.0073**	**0.3584**	**0.1258**	**0.4842**	**0.0000**	**1,454.7321**	**1,454.7321**	**0.1173**	**0.0000**	**1,457.5037**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4022	4.0169	2.9317	8.2600e-003	0.4870	0.1361	0.6231	0.1803	0.1258	0.3060	0.0000	751.8048	751.8048	0.1173	0.0000	754.7366
2022	5.2844	4.4525	4.4207	0.0157	0.7669	0.0837	0.8506	0.2093	0.0785	0.2877	0.0000	1,454.7319	1,454.7319	0.1109	0.0000	1,457.5034
Maximum	**5.2844**	**4.4525**	**4.4207**	**0.0157**	**0.7669**	**0.1361**	**0.8506**	**0.2093**	**0.1258**	**0.3060**	**0.0000**	**1,454.7319**	**1,454.7319**	**0.1173**	**0.0000**	**1,457.5034**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**26.24**	**0.00**	**23.24**	**33.18**	**0.00**	**24.57**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2021	8-31-2021	1.4929	1.4929
2	9-1-2021	11-30-2021	1.9307	1.9307
3	12-1-2021	2-28-2022	2.6648	2.6648
4	3-1-2022	5-31-2022	2.6357	2.6357
5	6-1-2022	8-31-2022	4.0643	4.0643
6	9-1-2022	9-30-2022	1.3253	1.3253
		Highest	4.0643	4.0643

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	812.4656	812.4656	0.0687	0.0142	818.4181
Mobile	7.7662	18.2288	74.0322	0.2218	20.5378	0.1677	20.7054	5.4717	0.1569	5.6287	0.0000	20,596.7101	20,596.7101	0.6126	0.0000	20,612.0243
Waste						0.0000	0.0000		0.0000	0.0000	181.2709	0.0000	181.2709	10.7128	0.0000	449.0911
Water						0.0000	0.0000		0.0000	0.0000	77.7258	170.3026	248.0284	0.2819	0.1720	306.3346
Total	**12.1092**	**18.2289**	**74.0451**	**0.2218**	**20.5378**	**0.1677**	**20.7055**	**5.4717**	**0.1570**	**5.6287**	**258.9967**	**21,579.5032**	**21,838.4999**	**11.6761**	**0.1862**	**22,185.8947**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	800.9369	800.9369	0.0677	0.0140	806.8050
Mobile	7.7460	18.1143	73.4064	0.2195	20.3105	0.1659	20.4764	5.4112	0.1553	5.5665	0.0000	20,384.5901	20,384.5901	0.6085	0.0000	20,399.8023
Waste						0.0000	0.0000		0.0000	0.0000	90.6355	0.0000	90.6355	5.3564	0.0000	224.5455
Water						0.0000	0.0000		0.0000	0.0000	62.1806	136.2421	198.4227	0.2255	0.1376	245.0677
Total	**12.0890**	**18.1144**	**73.4193**	**0.2195**	**20.3105**	**0.1660**	**20.4765**	**5.4112**	**0.1554**	**5.5665**	**152.8161**	**21,321.7940**	**21,474.6101**	**6.2582**	**0.1516**	**21,676.2471**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.17**	**0.63**	**0.85**	**1.03**	**1.11**	**1.04**	**1.11**	**1.11**	**1.04**	**1.10**	**41.00**	**1.19**	**1.67**	**46.40**	**18.58**	**2.30**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/14/2021	5	10	
2	Site Preparation	Site Preparation	6/15/2021	7/26/2021	5	30	
3	Grading	Grading	7/27/2021	11/8/2021	5	75	
4	Building Construction	Building Construction	11/9/2021	5/31/2022	5	146	
5	Paving	Paving	6/1/2022	9/30/2022	5	88	
6	Architectural Coating	Architectural Coating	6/1/2022	9/30/2022	5	88	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 55.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,425,000; Non-Residential Outdoor: 475,000; Striped Parking Area: 146,074 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,422.00	555.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	284.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2100e-003**	**7.2100e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.7000e-004	1.9000e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4714	0.4714	1.0000e-005	0.0000	0.4717
Total	**2.6000e-004**	**1.7000e-004**	**1.9000e-003**	**1.0000e-005**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4714**	**0.4714**	**1.0000e-005**	**0.0000**	**0.4717**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2100e-003**	**7.2100e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.7000e-004	1.9000e-003	1.0000e-005	5.1000e-004	0.0000	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4714	0.4714	1.0000e-005	0.0000	0.4717
Total	**2.6000e-004**	**1.7000e-004**	**1.9000e-003**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4714**	**0.4714**	**1.0000e-005**	**0.0000**	**0.4717**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1536	50.1536	0.0162	0.0000	50.5591
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.2710**	**0.0307**	**0.3017**	**0.1490**	**0.0282**	**0.1772**	**0.0000**	**50.1536**	**50.1536**	**0.0162**	**0.0000**	**50.5591**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	6.1000e-004	6.8300e-003	2.0000e-005	1.9800e-003	1.0000e-005	2.0000e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6972	1.6972	4.0000e-005	0.0000	1.6983
Total	**9.3000e-004**	**6.1000e-004**	**6.8300e-003**	**2.0000e-005**	**1.9800e-003**	**1.0000e-005**	**2.0000e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.6972**	**1.6972**	**4.0000e-005**	**0.0000**	**1.6983**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1057	0.0000	0.1057	0.0581	0.0000	0.0581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1535	50.1535	0.0162	0.0000	50.5590
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.1057**	**0.0307**	**0.1364**	**0.0581**	**0.0282**	**0.0863**	**0.0000**	**50.1535**	**50.1535**	**0.0162**	**0.0000**	**50.5590**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	6.1000e-004	6.8300e-003	2.0000e-005	1.8300e-003	1.0000e-005	1.8400e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.6972	1.6972	4.0000e-005	0.0000	1.6983
Total	**9.3000e-004**	**6.1000e-004**	**6.8300e-003**	**2.0000e-005**	**1.8300e-003**	**1.0000e-005**	**1.8400e-003**	**4.9000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.6972**	**1.6972**	**4.0000e-005**	**0.0000**	**1.6983**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1572	1.7400	1.1579	2.3300e-003		0.0745	0.0745		0.0685	0.0685	0.0000	204.3562	204.3562	0.0661	0.0000	206.0085
Total	**0.1572**	**1.7400**	**1.1579**	**2.3300e-003**	**0.3253**	**0.0745**	**0.3997**	**0.1349**	**0.0685**	**0.2034**	**0.0000**	**204.3562**	**204.3562**	**0.0661**	**0.0000**	**206.0085**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-003	1.7000e-003	0.0190	5.0000e-005	5.5100e-003	4.0000e-005	5.5500e-003	1.4700e-003	4.0000e-005	1.5000e-003	0.0000	4.7143	4.7143	1.2000e-004	0.0000	4.7174
Total	**2.6000e-003**	**1.7000e-003**	**0.0190**	**5.0000e-005**	**5.5100e-003**	**4.0000e-005**	**5.5500e-003**	**1.4700e-003**	**4.0000e-005**	**1.5000e-003**	**0.0000**	**4.7143**	**4.7143**	**1.2000e-004**	**0.0000**	**4.7174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1269	0.0000	0.1269	0.0526	0.0000	0.0526	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1572	1.7400	1.1579	2.3300e-003		0.0745	0.0745		0.0685	0.0685	0.0000	204.3559	204.3559	0.0661	0.0000	206.0083
Total	**0.1572**	**1.7400**	**1.1579**	**2.3300e-003**	**0.1269**	**0.0745**	**0.2013**	**0.0526**	**0.0685**	**0.1211**	**0.0000**	**204.3559**	**204.3559**	**0.0661**	**0.0000**	**206.0083**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-003	1.7000e-003	0.0190	5.0000e-005	5.0800e-003	4.0000e-005	5.1200e-003	1.3600e-003	4.0000e-005	1.4000e-003	0.0000	4.7143	4.7143	1.2000e-004	0.0000	4.7174
Total	**2.6000e-003**	**1.7000e-003**	**0.0190**	**5.0000e-005**	**5.0800e-003**	**4.0000e-005**	**5.1200e-003**	**1.3600e-003**	**4.0000e-005**	**1.4000e-003**	**0.0000**	**4.7143**	**4.7143**	**1.2000e-004**	**0.0000**	**4.7174**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3399	0.3232	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	45.1693	45.1693	0.0109	0.0000	45.4417
Total	**0.0371**	**0.3399**	**0.3232**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**45.1693**	**45.1693**	**0.0109**	**0.0000**	**45.4417**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.1071	0.2959	2.6400e-003	0.0633	3.0600e-003	0.0663	0.0183	2.9300e-003	0.0212	0.0000	253.9441	253.9441	0.0145	0.0000	254.3071
Worker	0.0960	0.0628	0.7018	1.9300e-003	0.2037	1.4200e-003	0.2051	0.0542	1.3100e-003	0.0555	0.0000	174.2987	174.2987	4.5800e-003	0.0000	174.4131
Total	**0.1301**	**1.1699**	**0.9977**	**4.5700e-003**	**0.2669**	**4.4800e-003**	**0.2714**	**0.0725**	**4.2400e-003**	**0.0767**	**0.0000**	**428.2428**	**428.2428**	**0.0191**	**0.0000**	**428.7202**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3399	0.3232	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	45.1692	45.1692	0.0109	0.0000	45.4417
Total	**0.0371**	**0.3399**	**0.3232**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**45.1692**	**45.1692**	**0.0109**	**0.0000**	**45.4417**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.1071	0.2959	2.6400e-003	0.0593	3.0600e-003	0.0623	0.0173	2.9300e-003	0.0202	0.0000	253.9441	253.9441	0.0145	0.0000	254.3071
Worker	0.0960	0.0628	0.7018	1.9300e-003	0.1878	1.4200e-003	0.1892	0.0503	1.3100e-003	0.0516	0.0000	174.2987	174.2987	4.5800e-003	0.0000	174.4131
Total	**0.1301**	**1.1699**	**0.9977**	**4.5700e-003**	**0.2471**	**4.4800e-003**	**0.2515**	**0.0676**	**4.2400e-003**	**0.0718**	**0.0000**	**428.2428**	**428.2428**	**0.0191**	**0.0000**	**428.7202**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0913	0.8354	0.8754	1.4400e-003		0.0433	0.0433		0.0407	0.0407	0.0000	123.9730	123.9730	0.0297	0.0000	124.7155
Total	**0.0913**	**0.8354**	**0.8754**	**1.4400e-003**		**0.0433**	**0.0433**		**0.0407**	**0.0407**	**0.0000**	**123.9730**	**123.9730**	**0.0297**	**0.0000**	**124.7155**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0867	2.8840	0.7485	7.1800e-003	0.1736	7.3600e-003	0.1809	0.0502	7.0400e-003	0.0572	0.0000	690.5942	690.5942	0.0387	0.0000	691.5617
Worker	0.2462	0.1548	1.7694	5.1000e-003	0.5587	3.8000e-003	0.5625	0.1486	3.5100e-003	0.1521	0.0000	461.0755	461.0755	0.0113	0.0000	461.3575
Total	**0.3329**	**3.0388**	**2.5179**	**0.0123**	**0.7323**	**0.0112**	**0.7435**	**0.1988**	**0.0106**	**0.2093**	**0.0000**	**1,151.6698**	**1,151.6698**	**0.0500**	**0.0000**	**1,152.9192**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0913	0.8354	0.8754	1.4400e-003		0.0433	0.0433		0.0407	0.0407	0.0000	123.9729	123.9729	0.0297	0.0000	124.7154
Total	**0.0913**	**0.8354**	**0.8754**	**1.4400e-003**		**0.0433**	**0.0433**		**0.0407**	**0.0407**	**0.0000**	**123.9729**	**123.9729**	**0.0297**	**0.0000**	**124.7154**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0867	2.8840	0.7485	7.1800e-003	0.1626	7.3600e-003	0.1699	0.0475	7.0400e-003	0.0545	0.0000	690.5942	690.5942	0.0387	0.0000	691.5617
Worker	0.2462	0.1548	1.7694	5.1000e-003	0.5153	3.8000e-003	0.5191	0.1379	3.5100e-003	0.1414	0.0000	461.0755	461.0755	0.0113	0.0000	461.3575
Total	**0.3329**	**3.0388**	**2.5179**	**0.0123**	**0.6778**	**0.0112**	**0.6890**	**0.1854**	**0.0106**	**0.1959**	**0.0000**	**1,151.6698**	**1,151.6698**	**0.0500**	**0.0000**	**1,152.9192**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.4895	0.6415	1.0000e-003		0.0250	0.0250		0.0230	0.0230	0.0000	88.1213	88.1213	0.0285	0.0000	88.8338
Paving	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0669**	**0.4895**	**0.6415**	**1.0000e-003**		**0.0250**	**0.0250**		**0.0230**	**0.0230**	**0.0000**	**88.1213**	**88.1213**	**0.0285**	**0.0000**	**88.8338**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	1.3400e-003	0.0154	4.0000e-005	4.8500e-003	3.0000e-005	4.8800e-003	1.2900e-003	3.0000e-005	1.3200e-003	0.0000	4.0000	4.0000	1.0000e-004	0.0000	4.0025
Total	**2.1400e-003**	**1.3400e-003**	**0.0154**	**4.0000e-005**	**4.8500e-003**	**3.0000e-005**	**4.8800e-003**	**1.2900e-003**	**3.0000e-005**	**1.3200e-003**	**0.0000**	**4.0000**	**4.0000**	**1.0000e-004**	**0.0000**	**4.0025**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.4895	0.6415	1.0000e-003		0.0250	0.0250		0.0230	0.0230	0.0000	88.1212	88.1212	0.0285	0.0000	88.8337
Paving	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0669**	**0.4895**	**0.6415**	**1.0000e-003**		**0.0250**	**0.0250**		**0.0230**	**0.0230**	**0.0000**	**88.1212**	**88.1212**	**0.0285**	**0.0000**	**88.8337**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	1.3400e-003	0.0154	4.0000e-005	4.4700e-003	3.0000e-005	4.5000e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	4.0000	4.0000	1.0000e-004	0.0000	4.0025
Total	**2.1400e-003**	**1.3400e-003**	**0.0154**	**4.0000e-005**	**4.4700e-003**	**3.0000e-005**	**4.5000e-003**	**1.2000e-003**	**3.0000e-005**	**1.2300e-003**	**0.0000**	**4.0000**	**4.0000**	**1.0000e-004**	**0.0000**	**4.0025**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-003	0.0620	0.0798	1.3000e-004		3.6000e-003	3.6000e-003		3.6000e-003	3.6000e-003	0.0000	11.2343	11.2343	7.3000e-004	0.0000	11.2526
Total	**4.7508**	**0.0620**	**0.0798**	**1.3000e-004**		**3.6000e-003**	**3.6000e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**11.2343**	**11.2343**	**7.3000e-004**	**0.0000**	**11.2526**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0254	0.2906	8.4000e-004	0.0918	6.2000e-004	0.0924	0.0244	5.8000e-004	0.0250	0.0000	75.7338	75.7338	1.8500e-003	0.0000	75.7801
Total	**0.0404**	**0.0254**	**0.2906**	**8.4000e-004**	**0.0918**	**6.2000e-004**	**0.0924**	**0.0244**	**5.8000e-004**	**0.0250**	**0.0000**	**75.7338**	**75.7338**	**1.8500e-003**	**0.0000**	**75.7801**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-003	0.0620	0.0798	1.3000e-004		3.6000e-003	3.6000e-003		3.6000e-003	3.6000e-003	0.0000	11.2343	11.2343	7.3000e-004	0.0000	11.2526
Total	**4.7508**	**0.0620**	**0.0798**	**1.3000e-004**		**3.6000e-003**	**3.6000e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**11.2343**	**11.2343**	**7.3000e-004**	**0.0000**	**11.2526**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0254	0.2906	8.4000e-004	0.0846	6.2000e-004	0.0853	0.0227	5.8000e-004	0.0232	0.0000	75.7338	75.7338	1.8500e-003	0.0000	75.7801
Total	**0.0404**	**0.0254**	**0.2906**	**8.4000e-004**	**0.0846**	**6.2000e-004**	**0.0853**	**0.0227**	**5.8000e-004**	**0.0232**	**0.0000**	**75.7338**	**75.7338**	**1.8500e-003**	**0.0000**	**75.7801**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Mitigated	7.7460	18.1143	73.4064	0.2195	20.3105	0.1659	20.4764	5.4112	0.1553	5.5665	0.0000	20,384.5901	20,384.5901	0.6085	0.0000	20,399.8023
Unmitigated	7.7662	18.2288	74.0322	0.2218	20.5378	0.1677	20.7054	5.4717	0.1569	5.6287	0.0000	20,596.7101	20,596.7101	0.6126	0.0000	20,612.0243

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	9,310.00	9,310.00	9310.00	55,618,564	55,003,110
Total	9,310.00	9,310.00	9,310.00	55,618,564	55,003,110

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	14.02	0.00	85.86	96.67	0.00	3.33	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Parking Lot	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.578841	0.038733	0.206173	0.118029	0.019040	0.000000	0.000000	0.033300	0.000000	0.000000	0.005884	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	800.9369	800.9369	0.0677	0.0140	806.8050
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	812.4656	812.4656	0.0687	0.0142	818.4181
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	638655	99.3633	8.4000e-003	1.7400e-003	100.0913
Parking Lot	213444	33.2081	2.8100e-003	5.8000e-004	33.4514
Unrefrigerated Warehouse-No Rail	4.37e+006	679.8941	0.0575	0.0119	684.8754
Total		**812.4656**	**0.0687**	**0.0142**	**818.4181**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	638655	99.3633	8.4000e-003	1.7400e-003	100.0913
Parking Lot	213444	33.2081	2.8100e-003	5.8000e-004	33.4514
Unrefrigerated Warehouse-No Rail	4.2959e+006	668.3655	0.0565	0.0117	673.2623
Total		**800.9369**	**0.0677**	**0.0140**	**806.8050**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Unmitigated	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-003	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Total	**4.3430**	**1.2000e-004**	**0.0129**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0250**	**0.0250**	**7.0000e-005**	**0.0000**	**0.0266**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-003	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Total	**4.3430**	**1.2000e-004**	**0.0129**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0250**	**0.0250**	**7.0000e-005**	**0.0000**	**0.0266**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	198.4227	0.2255	0.1376	245.0677
Unmitigated	248.0284	0.2819	0.1720	306.3346

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	219.688 / 0	248.0284	0.2819	0.1720	306.3346
Total		**248.0284**	**0.2819**	**0.1720**	**306.3346**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	175.75 / 0	198.4227	0.2255	0.1376	245.0677
Total		**198.4227**	**0.2255**	**0.1376**	**245.0677**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	90.6355	5.3564	0.0000	224.5455
Unmitigated	181.2709	10.7128	0.0000	449.0911

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	893	181.2709	10.7128	0.0000	449.0911
Total		**181.2709**	**10.7128**	**0.0000**	**449.0911**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	446.5	90.6355	5.3564	0.0000	224.5455
Total		**90.6355**	**5.3564**	**0.0000**	**224.5455**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Cargo Facility - Mitigated

Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	950.00	1000sqft	21.81	950,000.00	0
Other Non-Asphalt Surfaces	41.89	Acre	41.89	1,824,728.40	0
Parking Lot	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr)	343	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted per SMAQMD GHG threshold guidance

Land Use - Cargo Sort facility 900 KSF, 25 KSF ground crew bldg, 25 KSF maintenance bldg, parking/ramp footprint 14 acres (KSMF DD - 31OCT19-900sqft-V1 draft.xlsx)

Construction Phase - 16 month construction duration

Grading -

Vehicle Trips - trip rate: 9,310 daily trips / 950 (ksf)= 9.8 trip length and % based on traffic data provided, reduced trip length by 6.3% to account for 24 days of no operation.

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - Fugitive dust control

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - CEC - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Fleet Mix - based on traffic study

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	60.00	30.00
tblConstructionPhase	NumDays	155.00	75.00
tblConstructionPhase	NumDays	1,550.00	146.00
tblConstructionPhase	NumDays	110.00	88.00
tblConstructionPhase	NumDays	110.00	88.00

tblEnergyUse	LightingElect	0.00	0.35
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	T24NG	0.49	0.00
tblFleetMix	HHD	0.02	0.03
tblFleetMix	LDA	0.56	0.58
tblFleetMix	LHD2	5.2450e-003	0.00
tblFleetMix	MH	8.6500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0310e-003	0.00
tblFleetMix	SBUS	6.1900e-004	0.00
tblFleetMix	UBUS	2.0540e-003	0.00
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
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tblVehicleEF	HHD	0.03	0.04

tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
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tblVehicleEF	HHD	0.03	0.03
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tblVehicleEF	HHD	0.10	0.00

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tblVehicleEF	HHD	0.02	0.02
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tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
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tblVehicleEF	HHD	0.02	0.01
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tblVehicleEF	LDA	0.09	0.23

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tblVehicleEF	LDA	0.11	0.12
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tblVehicleEF	LDA	0.10	0.34
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tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10
tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
tblVehicleEF	LDT1	3.1540e-003	3.0560e-003
tblVehicleEF	LDT1	7.7500e-004	6.5100e-004
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.44
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.25	0.45
tblVehicleEF	LDT1	0.01	6.3980e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.70	1.51
tblVehicleEF	LDT1	2.71	2.06
tblVehicleEF	LDT1	346.93	337.97
tblVehicleEF	LDT1	71.71	64.83
tblVehicleEF	LDT1	0.12	0.09
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003

tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	3.4910e-003	3.3440e-003
tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
tblVehicleEF	LDT1	4.17	3.15
tblVehicleEF	LDT1	304.87	301.05
tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003

tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10

tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15

tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07

tblVehicleEF	LHD1	2.48	0.91
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.90
tblVehicleEF	LHD1	31.04	10.10
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8590e-003
tblVehicleEF	LHD1	3.5700e-004	1.0000e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10

tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
tblVehicleEF	LHD1	31.04	10.41
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09

tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	4.6680e-003
tblVehicleEF	LHD2	8.8820e-003	3.4690e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.73	0.37
tblVehicleEF	LHD2	1.31	0.40
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.74
tblVehicleEF	LHD2	24.40	5.96
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.35	0.14
tblVehicleEF	LHD2	0.53	0.11

tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003
tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	3.7610e-003
tblVehicleEF	LHD2	0.04	5.1620e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	5.6200e-004	1.7130e-003
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.12	0.01
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0120e-003	7.2570e-003
tblVehicleEF	LHD2	2.6800e-004	5.9000e-005
tblVehicleEF	LHD2	1.3190e-003	3.7610e-003
tblVehicleEF	LHD2	0.04	5.1620e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	5.6200e-004	1.7130e-003
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.13	0.02
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	0.01	4.6960e-003

tblVehicleEF	LHD2	8.3620e-003	3.2670e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.74	0.37
tblVehicleEF	LHD2	1.20	0.37
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.75
tblVehicleEF	LHD2	24.40	5.91
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.26	0.13
tblVehicleEF	LHD2	0.50	0.10
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003
tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	3.3510e-003	9.6940e-003
tblVehicleEF	LHD2	0.05	6.8880e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	1.4060e-003	4.5050e-003
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.11	0.01
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0120e-003	7.2570e-003

tblVehicleEF	LHD2	2.6600e-004	5.8000e-005
tblVehicleEF	LHD2	3.3510e-003	9.6940e-003
tblVehicleEF	LHD2	0.05	6.8880e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	1.4060e-003	4.5050e-003
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.12	0.01
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.7880e-003	4.6370e-003
tblVehicleEF	LHD2	9.5090e-003	3.7040e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.72	0.37
tblVehicleEF	LHD2	1.44	0.44
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.74
tblVehicleEF	LHD2	24.40	6.03
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.38	0.14
tblVehicleEF	LHD2	0.57	0.11
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003

tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	4.0000e-004	1.1050e-003
tblVehicleEF	LHD2	0.04	5.0690e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	1.5100e-004	4.2500e-004
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.10	0.02
tblVehicleEF	LHD2	0.13	0.02
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0110e-003	7.2570e-003
tblVehicleEF	LHD2	2.7000e-004	6.0000e-005
tblVehicleEF	LHD2	4.0000e-004	1.1050e-003
tblVehicleEF	LHD2	0.04	5.0690e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	1.5100e-004	4.2500e-004
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.10	0.02
tblVehicleEF	LHD2	0.14	0.02
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003

tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003

tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003

tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003

tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31

tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18

tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11

tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004

tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
tblVehicleEF	MH	1.69	1.73
tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03

tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.16	0.11
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.5850e-003	9.0600e-004
tblVehicleEF	MHD	0.06	3.4050e-003
tblVehicleEF	MHD	0.41	5.42
tblVehicleEF	MHD	0.52	0.13
tblVehicleEF	MHD	6.57	0.32
tblVehicleEF	MHD	147.37	1,172.79
tblVehicleEF	MHD	1,210.28	1,109.36
tblVehicleEF	MHD	57.55	3.89
tblVehicleEF	MHD	0.76	5.38
tblVehicleEF	MHD	1.79	1.37
tblVehicleEF	MHD	11.25	1.96

tblVehicleEF	MHD	3.8380e-003	1.3080e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	3.6720e-003	1.2520e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	1.5080e-003	1.6610e-003
tblVehicleEF	MHD	0.05	2.5350e-003
tblVehicleEF	MHD	0.04	0.21
tblVehicleEF	MHD	6.3200e-004	7.7500e-004
tblVehicleEF	MHD	0.07	0.01
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.40	0.02
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	3.9000e-005
tblVehicleEF	MHD	1.5080e-003	1.6610e-003
tblVehicleEF	MHD	0.05	2.5350e-003
tblVehicleEF	MHD	0.05	4.16
tblVehicleEF	MHD	6.3200e-004	7.7500e-004
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.43	0.02
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	7.7620e-003	9.1900e-004
tblVehicleEF	MHD	0.05	3.2200e-003
tblVehicleEF	MHD	0.29	4.84

tblVehicleEF	MHD	0.53	0.13
tblVehicleEF	MHD	6.05	0.29
tblVehicleEF	MHD	156.25	1,162.65
tblVehicleEF	MHD	1,210.28	1,109.36
tblVehicleEF	MHD	57.55	3.85
tblVehicleEF	MHD	0.78	5.14
tblVehicleEF	MHD	1.67	1.28
tblVehicleEF	MHD	11.19	1.96
tblVehicleEF	MHD	3.2360e-003	1.1620e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	3.0960e-003	1.1120e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	3.9020e-003	4.2360e-003
tblVehicleEF	MHD	0.07	3.2940e-003
tblVehicleEF	MHD	0.03	0.20
tblVehicleEF	MHD	1.6400e-003	1.9810e-003
tblVehicleEF	MHD	0.07	0.01
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.37	0.01
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	3.8000e-005
tblVehicleEF	MHD	3.9020e-003	4.2360e-003
tblVehicleEF	MHD	0.07	3.2940e-003
tblVehicleEF	MHD	0.04	3.97

tblVehicleEF	MHD	1.6400e-003	1.9810e-003
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.41	0.02
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	8.9100e-004
tblVehicleEF	MHD	0.06	3.6350e-003
tblVehicleEF	MHD	0.54	6.03
tblVehicleEF	MHD	0.51	0.13
tblVehicleEF	MHD	7.31	0.35
tblVehicleEF	MHD	135.45	1,187.91
tblVehicleEF	MHD	1,210.28	1,109.35
tblVehicleEF	MHD	57.55	3.95
tblVehicleEF	MHD	0.72	5.73
tblVehicleEF	MHD	1.83	1.39
tblVehicleEF	MHD	11.33	1.96
tblVehicleEF	MHD	4.6700e-003	1.5090e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	4.4680e-003	1.4440e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	4.3200e-004	5.1000e-004
tblVehicleEF	MHD	0.05	2.4900e-003
tblVehicleEF	MHD	0.04	0.21
tblVehicleEF	MHD	1.5900e-004	2.0100e-004
tblVehicleEF	MHD	0.07	0.01

tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.43	0.02
tblVehicleEF	MHD	1.3050e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	3.9000e-005
tblVehicleEF	MHD	4.3200e-004	5.1000e-004
tblVehicleEF	MHD	0.05	2.4900e-003
tblVehicleEF	MHD	0.05	4.32
tblVehicleEF	MHD	1.5900e-004	2.0100e-004
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.47	0.02
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
tblVehicleEF	OBUS	0.88	1.14
tblVehicleEF	OBUS	6.77	1.47
tblVehicleEF	OBUS	128.59	1,671.65
tblVehicleEF	OBUS	1,355.95	1,492.53
tblVehicleEF	OBUS	68.41	11.11
tblVehicleEF	OBUS	0.61	8.80
tblVehicleEF	OBUS	1.94	2.02
tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004

tblVehicleEF	OBUS	1.3200e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
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tblVehicleEF	OBUS	135.23	1,670.58

tblVehicleEF	OBUS	1,355.95	1,492.59
tblVehicleEF	OBUS	68.41	10.86
tblVehicleEF	OBUS	0.63	8.63
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tblVehicleEF	OBUS	2.82	1.19
tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
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tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
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tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17

tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	0.01
tblVehicleEF	OBUS	0.31	9.85
tblVehicleEF	OBUS	0.86	1.11
tblVehicleEF	OBUS	7.61	1.65
tblVehicleEF	OBUS	119.42	1,673.14
tblVehicleEF	OBUS	1,355.95	1,492.47
tblVehicleEF	OBUS	68.41	11.41
tblVehicleEF	OBUS	0.58	9.03
tblVehicleEF	OBUS	1.99	2.08
tblVehicleEF	OBUS	2.99	1.21
tblVehicleEF	OBUS	1.6800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.81
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.45	0.07
tblVehicleEF	OBUS	1.1510e-003	0.02

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1700e-004	1.1300e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.11	0.13
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.49	0.08
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3810e-003
tblVehicleEF	SBUS	0.07	8.4610e-003
tblVehicleEF	SBUS	6.73	16.57
tblVehicleEF	SBUS	0.65	0.43
tblVehicleEF	SBUS	6.39	1.31
tblVehicleEF	SBUS	1,201.53	3,573.20
tblVehicleEF	SBUS	1,096.07	1,113.09
tblVehicleEF	SBUS	44.67	7.18
tblVehicleEF	SBUS	10.71	40.83
tblVehicleEF	SBUS	4.39	6.66
tblVehicleEF	SBUS	13.82	0.61
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003

tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.34	0.05
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.5700e-004	7.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.57
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.4430e-003
tblVehicleEF	SBUS	0.05	6.7490e-003
tblVehicleEF	SBUS	6.59	16.09
tblVehicleEF	SBUS	0.67	0.43
tblVehicleEF	SBUS	4.25	0.87
tblVehicleEF	SBUS	1,259.83	3,697.06
tblVehicleEF	SBUS	1,096.07	1,113.10

tblVehicleEF	SBUS	44.67	6.45
tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22
tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13

tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11

tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003

tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004

tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08

tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CNW_TL	6.50	85.86
tblVehicleTrips	CNW_TTP	41.00	3.33
tblVehicleTrips	CW_TL	10.00	14.02
tblVehicleTrips	CW_TTP	59.00	96.67
tblVehicleTrips	DV_TP	5.00	0.00

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.68	9.80
tblVehicleTrips	SU_TR	1.68	9.80
tblVehicleTrips	WD_TR	1.68	9.80

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	9.3153	76.0940	73.3493	0.2734	18.2032	2.0454	20.2486	9.9670	1.8818	11.8488	0.0000	27,964.7196	27,964.7196	1.9469	0.0000	28,007.1991
2022	110.6104	71.2367	68.6545	0.2681	14.1563	1.0140	15.1704	3.8302	0.9548	4.7850	0.0000	27,448.2230	27,448.2230	1.6429	0.0000	27,489.2956
Maximum	**110.6104**	**76.0940**	**73.3493**	**0.2734**	**18.2032**	**2.0454**	**20.2486**	**9.9670**	**1.8818**	**11.8488**	**0.0000**	**27,964.7196**	**27,964.7196**	**1.9469**	**0.0000**	**28,007.1991**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	9.3153	76.0940	73.3493	0.2734	13.0961	2.0454	14.2806	3.9067	1.8818	5.7884	0.0000	27,964.7196	27,964.7196	1.9469	0.0000	28,007.1991
2022	110.6104	71.2367	68.6545	0.2681	13.0957	1.0140	14.1097	3.5699	0.9548	4.5246	0.0000	27,448.2230	27,448.2230	1.6429	0.0000	27,489.2956
Maximum	**110.6104**	**76.0940**	**73.3493**	**0.2734**	**13.0961**	**2.0454**	**14.2806**	**3.9067**	**1.8818**	**5.7884**	**0.0000**	**27,964.7196**	**27,964.7196**	**1.9469**	**0.0000**	**28,007.1991**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.06**	**0.00**	**19.84**	**45.81**	**0.00**	**38.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	62.7376	93.8458	469.5866	1.3090	116.8574	0.9210	117.7784	31.0493	0.8620	31.9113		133,911.2356	133,911.2356	3.6794		134,003.2217
Total	**86.5377**	**93.8467**	**469.6895**	**1.3090**	**116.8574**	**0.9214**	**117.7788**	**31.0493**	**0.8624**	**31.9117**		**133,911.4557**	**133,911.4557**	**3.6800**	**0.0000**	**134,003.4563**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	62.6201	93.2646	465.3463	1.2954	115.5643	0.9114	116.4758	30.7057	0.8530	31.5587		132,524.1106	132,524.1106	3.6528		132,615.4297
Total	**86.4202**	**93.2656**	**465.4492**	**1.2954**	**115.5643**	**0.9118**	**116.4761**	**30.7057**	**0.8534**	**31.5591**		**132,524.3308**	**132,524.3308**	**3.6533**	**0.0000**	**132,615.6644**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.14	0.62	0.90	1.04	1.11	1.04	1.11	1.11	1.04	1.10	0.00	1.04	1.04	0.72	0.00	1.04

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/14/2021	5	10	
2	Site Preparation	Site Preparation	6/15/2021	7/26/2021	5	30	
3	Grading	Grading	7/27/2021	11/8/2021	5	75	
4	Building Construction	Building Construction	11/9/2021	5/31/2022	5	146	
5	Paving	Paving	6/1/2022	9/30/2022	5	88	
6	Architectural Coating	Architectural Coating	6/1/2022	9/30/2022	5	88	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 55.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,425,000; Non-Residential Outdoor: 475,000; Striped Parking Area: 146,074 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,422.00	555.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	284.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**		**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0308	0.4487	1.1500e-003	0.1141	7.7000e-004	0.1149	0.0303	7.1000e-004	0.0310		114.9719	114.9719	3.0600e-003		115.0483
Total	**0.0601**	**0.0308**	**0.4487**	**1.1500e-003**	**0.1141**	**7.7000e-004**	**0.1149**	**0.0303**	**7.1000e-004**	**0.0310**		**114.9719**	**114.9719**	**3.0600e-003**		**115.0483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**	**0.0000**	**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0308	0.4487	1.1500e-003	0.1052	7.7000e-004	0.1060	0.0281	7.1000e-004	0.0288		114.9719	114.9719	3.0600e-003		115.0483
Total	**0.0601**	**0.0308**	**0.4487**	**1.1500e-003**	**0.1052**	**7.7000e-004**	**0.1060**	**0.0281**	**7.1000e-004**	**0.0288**		**114.9719**	**114.9719**	**3.0600e-003**		**115.0483**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0721	0.0369	0.5385	1.3900e-003	0.1369	9.2000e-004	0.1379	0.0363	8.5000e-004	0.0372		137.9662	137.9662	3.6700e-003		138.0580
Total	**0.0721**	**0.0369**	**0.5385**	**1.3900e-003**	**0.1369**	**9.2000e-004**	**0.1379**	**0.0363**	**8.5000e-004**	**0.0372**		**137.9662**	**137.9662**	**3.6700e-003**		**138.0580**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**7.0458**	**2.0445**	**9.0903**	**3.8730**	**1.8809**	**5.7539**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0721	0.0369	0.5385	1.3900e-003	0.1262	9.2000e-004	0.1271	0.0337	8.5000e-004	0.0345		137.9662	137.9662	3.6700e-003		138.0580
Total	**0.0721**	**0.0369**	**0.5385**	**1.3900e-003**	**0.1262**	**9.2000e-004**	**0.1271**	**0.0337**	**8.5000e-004**	**0.0345**		**137.9662**	**137.9662**	**3.6700e-003**		**138.0580**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0802	0.0410	0.5983	1.5400e-003	0.1521	1.0300e-003	0.1532	0.0404	9.5000e-004	0.0413		153.2958	153.2958	4.0800e-003		153.3978
Total	**0.0802**	**0.0410**	**0.5983**	**1.5400e-003**	**0.1521**	**1.0300e-003**	**0.1532**	**0.0404**	**9.5000e-004**	**0.0413**		**153.2958**	**153.2958**	**4.0800e-003**		**153.3978**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.3826**	**1.9853**	**5.3679**	**1.4026**	**1.8265**	**3.2292**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0802	0.0410	0.5983	1.5400e-003	0.1402	1.0300e-003	0.1413	0.0374	9.5000e-004	0.0384		153.2958	153.2958	4.0800e-003		153.3978
Total	**0.0802**	**0.0410**	**0.5983**	**1.5400e-003**	**0.1402**	**1.0300e-003**	**0.1413**	**0.0374**	**9.5000e-004**	**0.0384**		**153.2958**	**153.2958**	**4.0800e-003**		**153.3978**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7151	55.7444	14.2344	0.1370	3.3396	0.1529	3.4925	0.9610	0.1462	1.1072		14,512.0238	14,512.0238	0.7931		14,531.8522
Worker	5.6993	2.9174	42.5397	0.1095	10.8171	0.0730	10.8902	2.8694	0.0673	2.9366		10,899.3319	10,899.3319	0.2900		10,906.5826
Total	**7.4144**	**58.6619**	**56.7741**	**0.2465**	**14.1567**	**0.2259**	**14.3826**	**3.8303**	**0.2135**	**4.0439**		**25,411.3557**	**25,411.3557**	**1.0832**		**25,438.4348**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7151	55.7444	14.2344	0.1370	3.1250	0.1529	3.2779	0.9083	0.1462	1.0545		14,512.0238	14,512.0238	0.7931		14,531.8522
Worker	5.6993	2.9174	42.5397	0.1095	9.9711	0.0730	10.0441	2.6617	0.0673	2.7290		10,899.3319	10,899.3319	0.2900		10,906.5826
Total	**7.4144**	**58.6619**	**56.7741**	**0.2465**	**13.0961**	**0.2259**	**13.3220**	**3.5700**	**0.2135**	**3.7835**		**25,411.3557**	**25,411.3557**	**1.0832**		**25,438.4348**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5914	52.9971	13.1151	0.1357	3.3392	0.1339	3.4731	0.9608	0.1281	1.0889		14,385.4341	14,385.4341	0.7703		14,404.6906
Worker	5.3198	2.6239	39.1760	0.1055	10.8171	0.0711	10.8883	2.8694	0.0655	2.9349		10,508.4554	10,508.4554	0.2607		10,514.9728
Total	**6.9111**	**55.6210**	**52.2911**	**0.2412**	**14.1563**	**0.2050**	**14.3614**	**3.8302**	**0.1936**	**4.0238**		**24,893.8895**	**24,893.8895**	**1.0310**		**24,919.6634**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5914	52.9971	13.1151	0.1357	3.1246	0.1339	3.2585	0.9082	0.1281	1.0362		14,385.4341	14,385.4341	0.7703		14,404.6906
Worker	5.3198	2.6239	39.1760	0.1055	9.9711	0.0711	10.0422	2.6617	0.0655	2.7272		10,508.4554	10,508.4554	0.2607		10,514.9728
Total	**6.9111**	**55.6210**	**52.2911**	**0.2412**	**13.0957**	**0.2050**	**13.3007**	**3.5699**	**0.1936**	**3.7634**		**24,893.8895**	**24,893.8895**	**1.0310**		**24,919.6634**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.4168					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5196**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0277	0.4133	1.1100e-003	0.1141	7.5000e-004	0.1149	0.0303	6.9000e-004	0.0310		110.8487	110.8487	2.7500e-003		110.9174
Total	**0.0561**	**0.0277**	**0.4133**	**1.1100e-003**	**0.1141**	**7.5000e-004**	**0.1149**	**0.0303**	**6.9000e-004**	**0.0310**		**110.8487**	**110.8487**	**2.7500e-003**		**110.9174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	0.4168					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5196**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0277	0.4133	1.1100e-003	0.1052	7.5000e-004	0.1059	0.0281	6.9000e-004	0.0288		110.8487	110.8487	2.7500e-003		110.9174
Total	**0.0561**	**0.0277**	**0.4133**	**1.1100e-003**	**0.1052**	**7.5000e-004**	**0.1059**	**0.0281**	**6.9000e-004**	**0.0288**		**110.8487**	**110.8487**	**2.7500e-003**		**110.9174**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	107.7677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**107.9722**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	1.0625	0.5240	7.8242	0.0211	2.1604	0.0142	2.1746	0.5731	0.0131	0.5862		2,098.735 1	2,098.735 1	0.0521		2,100.036 8
Total	**1.0625**	**0.5240**	**7.8242**	**0.0211**	**2.1604**	**0.0142**	**2.1746**	**0.5731**	**0.0131**	**0.5862**		**2,098.735 1**	**2,098.735 1**	**0.0521**		**2,100.036 8**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	107.7677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**107.9722**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	1.0625	0.5240	7.8242	0.0211	1.9914	0.0142	2.0056	0.5316	0.0131	0.5447		2,098.735 1	2,098.735 1	0.0521		2,100.036 8
Total	**1.0625**	**0.5240**	**7.8242**	**0.0211**	**1.9914**	**0.0142**	**2.0056**	**0.5316**	**0.0131**	**0.5447**		**2,098.735 1**	**2,098.735 1**	**0.0521**		**2,100.036 8**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	62.6201	93.2646	465.3463	1.2954	115.5643	0.9114	116.4758	30.7057	0.8530	31.5587		132,524.1106	132,524.1106	3.6528		132,615.4297
Unmitigated	62.7376	93.8458	469.5866	1.3090	116.8574	0.9210	117.7784	31.0493	0.8620	31.9113		133,911.2356	133,911.2356	3.6794		134,003.2217

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	9,310.00	9,310.00	9310.00	55,618,564	55,003,110
Total	9,310.00	9,310.00	9,310.00	55,618,564	55,003,110

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	14.02	0.00	85.86	96.67	0.00	3.33	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Parking Lot	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.578841	0.038733	0.206173	0.118029	0.019040	0.000000	0.000000	0.033300	0.000000	0.000000	0.005884	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Unmitigated	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.5982					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5700e-003	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Total	**23.8001**	**9.4000e-004**	**0.1029**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2201**	**0.2201**	**5.8000e-004**		**0.2347**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.5982					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5700e-003	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Total	**23.8001**	**9.4000e-004**	**0.1029**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2201**	**0.2201**	**5.8000e-004**		**0.2347**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Cargo Facility - Mitigated
Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	950.00	1000sqft	21.81	950,000.00	0
Other Non-Asphalt Surfaces	41.89	Acre	41.89	1,824,728.40	0
Parking Lot	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.5 **Precipitation Freq (Days)** 58

Climate Zone 6 **Operational Year** 2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr) 343 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted per SMAQMD GHG threshold guidance

Land Use - Cargo Sort facility 900 KSF, 25 KSF ground crew bldg, 25 KSF maintenance bldg, parking/ramp footprint 14 acres (KSMF DD - 31OCT19-900sqft-V1 draft.xlsx)

Construction Phase - 16 month construction duration

Grading -

Vehicle Trips - trip rate: 9,310 daily trips / 950 (ksf)= 9.8 trip length and % based on traffic data provided, reduced trip length by 6.3% to account for 24 days of no operation.

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - Fugitive dust control

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - CEC - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Fleet Mix - based on traffic study

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	60.00	30.00
tblConstructionPhase	NumDays	155.00	75.00
tblConstructionPhase	NumDays	1,550.00	146.00
tblConstructionPhase	NumDays	110.00	88.00
tblConstructionPhase	NumDays	110.00	88.00

tblEnergyUse	LightingElect	0.00	0.35
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	T24NG	0.49	0.00
tblFleetMix	HHD	0.02	0.03
tblFleetMix	LDA	0.56	0.58
tblFleetMix	LHD2	5.2450e-003	0.00
tblFleetMix	MH	8.6500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0310e-003	0.00
tblFleetMix	SBUS	6.1900e-004	0.00
tblFleetMix	UBUS	2.0540e-003	0.00
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.22
tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	63.58
tblVehicleEF	HHD	1.02	0.37
tblVehicleEF	HHD	3.28	3.4500e-003
tblVehicleEF	HHD	4,159.31	10,790.13
tblVehicleEF	HHD	1,651.06	1,442.00
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	22.32	52.48
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tblVehicleEF	HHD	19.79	2.86
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tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04

tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
tblVehicleEF	HHD	1.5300e-004	3.0000e-006
tblVehicleEF	HHD	5.4300e-003	3.0000e-006
tblVehicleEF	HHD	0.63	4.36
tblVehicleEF	HHD	7.2000e-005	1.0000e-006
tblVehicleEF	HHD	0.11	0.03
tblVehicleEF	HHD	8.2400e-004	8.0000e-006
tblVehicleEF	HHD	0.09	2.0000e-006
tblVehicleEF	HHD	0.04	0.10
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	3.0000e-006
tblVehicleEF	HHD	5.4300e-003	3.0000e-006
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tblVehicleEF	HHD	7.2000e-005	1.0000e-006
tblVehicleEF	HHD	0.20	0.07
tblVehicleEF	HHD	8.2400e-004	8.0000e-006
tblVehicleEF	HHD	0.10	2.0000e-006
tblVehicleEF	HHD	0.57	0.23
tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.10	0.00

tblVehicleEF	HHD	1.77	62.65
tblVehicleEF	HHD	1.03	0.37
tblVehicleEF	HHD	3.02	3.1780e-003
tblVehicleEF	HHD	4,406.18	10,671.93
tblVehicleEF	HHD	1,651.06	1,442.00
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	23.04	50.03
tblVehicleEF	HHD	3.15	2.22
tblVehicleEF	HHD	19.77	2.86
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
tblVehicleEF	HHD	4.0400e-004	8.0000e-006
tblVehicleEF	HHD	6.4540e-003	5.0000e-006
tblVehicleEF	HHD	0.59	4.61
tblVehicleEF	HHD	1.9500e-004	3.0000e-006
tblVehicleEF	HHD	0.11	0.03
tblVehicleEF	HHD	8.4500e-004	8.0000e-006
tblVehicleEF	HHD	0.09	2.0000e-006
tblVehicleEF	HHD	0.04	0.10

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	4.0400e-004	8.0000e-006
tblVehicleEF	HHD	6.4540e-003	5.0000e-006
tblVehicleEF	HHD	0.68	48.53
tblVehicleEF	HHD	1.9500e-004	3.0000e-006
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tblVehicleEF	HHD	0.10	2.0000e-006
tblVehicleEF	HHD	0.65	0.20
tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	HHD	3.34	64.86
tblVehicleEF	HHD	1.01	0.37
tblVehicleEF	HHD	3.67	3.8240e-003
tblVehicleEF	HHD	3,818.40	10,953.35
tblVehicleEF	HHD	1,651.06	1,442.00
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	21.33	55.85
tblVehicleEF	HHD	3.43	2.41
tblVehicleEF	HHD	19.81	2.86
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.04	0.02

tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
tblVehicleEF	HHD	4.3000e-005	1.0000e-006
tblVehicleEF	HHD	5.5610e-003	3.0000e-006
tblVehicleEF	HHD	0.68	4.01
tblVehicleEF	HHD	1.6000e-005	0.00
tblVehicleEF	HHD	0.11	0.03
tblVehicleEF	HHD	8.9700e-004	9.0000e-006
tblVehicleEF	HHD	0.10	2.0000e-006
tblVehicleEF	HHD	0.04	0.10
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.5200e-004	0.00
tblVehicleEF	HHD	4.3000e-005	1.0000e-006
tblVehicleEF	HHD	5.5610e-003	3.0000e-006
tblVehicleEF	HHD	0.78	42.26
tblVehicleEF	HHD	1.6000e-005	0.00
tblVehicleEF	HHD	0.20	0.07
tblVehicleEF	HHD	8.9700e-004	9.0000e-006
tblVehicleEF	HHD	0.11	3.0000e-006
tblVehicleEF	LDA	4.2860e-003	2.5680e-003
tblVehicleEF	LDA	5.8650e-003	0.06
tblVehicleEF	LDA	0.61	0.70
tblVehicleEF	LDA	1.26	2.30
tblVehicleEF	LDA	252.52	260.95
tblVehicleEF	LDA	57.68	54.60

tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
tblVehicleEF	LDA	5.9800e-004	5.4000e-004
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
tblVehicleEF	LDA	5.0150e-003	3.0340e-003
tblVehicleEF	LDA	4.7840e-003	0.05
tblVehicleEF	LDA	0.78	0.89
tblVehicleEF	LDA	1.03	1.90
tblVehicleEF	LDA	280.47	289.33
tblVehicleEF	LDA	57.68	53.81
tblVehicleEF	LDA	0.05	0.04

tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
tblVehicleEF	LDA	5.9400e-004	5.3200e-004
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.0630e-003	2.3890e-003
tblVehicleEF	LDA	7.0460e-003	0.07
tblVehicleEF	LDA	0.58	0.66
tblVehicleEF	LDA	1.57	2.88
tblVehicleEF	LDA	245.02	253.39
tblVehicleEF	LDA	57.68	55.70
tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23

tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
tblVehicleEF	LDA	2.4540e-003	2.5070e-003
tblVehicleEF	LDA	6.0400e-004	5.5100e-004
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
tblVehicleEF	LDT1	0.01	5.4680e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10
tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
tblVehicleEF	LDT1	3.1540e-003	3.0560e-003
tblVehicleEF	LDT1	7.7500e-004	6.5100e-004
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.44
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.25	0.45
tblVehicleEF	LDT1	0.01	6.3980e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.70	1.51
tblVehicleEF	LDT1	2.71	2.06
tblVehicleEF	LDT1	346.93	337.97
tblVehicleEF	LDT1	71.71	64.83
tblVehicleEF	LDT1	0.12	0.09
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003

tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	3.4910e-003	3.3440e-003
tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
tblVehicleEF	LDT1	4.17	3.15
tblVehicleEF	LDT1	304.87	301.05
tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003

tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

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tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10

tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15

tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07

tblVehicleEF	LHD1	2.48	0.91
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.90
tblVehicleEF	LHD1	31.04	10.10
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8590e-003
tblVehicleEF	LHD1	3.5700e-004	1.0000e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10

tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
tblVehicleEF	LHD1	31.04	10.41
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09

tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	4.6680e-003
tblVehicleEF	LHD2	8.8820e-003	3.4690e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.73	0.37
tblVehicleEF	LHD2	1.31	0.40
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.74
tblVehicleEF	LHD2	24.40	5.96
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.35	0.14
tblVehicleEF	LHD2	0.53	0.11

tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003
tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	3.7610e-003
tblVehicleEF	LHD2	0.04	5.1620e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	5.6200e-004	1.7130e-003
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.12	0.01
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0120e-003	7.2570e-003
tblVehicleEF	LHD2	2.6800e-004	5.9000e-005
tblVehicleEF	LHD2	1.3190e-003	3.7610e-003
tblVehicleEF	LHD2	0.04	5.1620e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	5.6200e-004	1.7130e-003
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.13	0.02
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	0.01	4.6960e-003

tblVehicleEF	LHD2	8.3620e-003	3.2670e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.74	0.37
tblVehicleEF	LHD2	1.20	0.37
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.75
tblVehicleEF	LHD2	24.40	5.91
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.26	0.13
tblVehicleEF	LHD2	0.50	0.10
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003
tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	3.3510e-003	9.6940e-003
tblVehicleEF	LHD2	0.05	6.8880e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	1.4060e-003	4.5050e-003
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.11	0.01
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0120e-003	7.2570e-003

tblVehicleEF	LHD2	2.6600e-004	5.8000e-005
tblVehicleEF	LHD2	3.3510e-003	9.6940e-003
tblVehicleEF	LHD2	0.05	6.8880e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	1.4060e-003	4.5050e-003
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.12	0.01
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.7880e-003	4.6370e-003
tblVehicleEF	LHD2	9.5090e-003	3.7040e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.72	0.37
tblVehicleEF	LHD2	1.44	0.44
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.74
tblVehicleEF	LHD2	24.40	6.03
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.38	0.14
tblVehicleEF	LHD2	0.57	0.11
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003

tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	4.0000e-004	1.1050e-003
tblVehicleEF	LHD2	0.04	5.0690e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	1.5100e-004	4.2500e-004
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.10	0.02
tblVehicleEF	LHD2	0.13	0.02
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0110e-003	7.2570e-003
tblVehicleEF	LHD2	2.7000e-004	6.0000e-005
tblVehicleEF	LHD2	4.0000e-004	1.1050e-003
tblVehicleEF	LHD2	0.04	5.0690e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	1.5100e-004	4.2500e-004
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.10	0.02
tblVehicleEF	LHD2	0.14	0.02
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003

tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003

tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003

tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003

tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31

tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18

tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11

tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004

tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
tblVehicleEF	MH	1.69	1.73
tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03

tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.16	0.11
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.5850e-003	9.0600e-004
tblVehicleEF	MHD	0.06	3.4050e-003
tblVehicleEF	MHD	0.41	5.42
tblVehicleEF	MHD	0.52	0.13
tblVehicleEF	MHD	6.57	0.32
tblVehicleEF	MHD	147.37	1,172.79
tblVehicleEF	MHD	1,210.28	1,109.36
tblVehicleEF	MHD	57.55	3.89
tblVehicleEF	MHD	0.76	5.38
tblVehicleEF	MHD	1.79	1.37
tblVehicleEF	MHD	11.25	1.96

tblVehicleEF	MHD	3.8380e-003	1.3080e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	3.6720e-003	1.2520e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	1.5080e-003	1.6610e-003
tblVehicleEF	MHD	0.05	2.5350e-003
tblVehicleEF	MHD	0.04	0.21
tblVehicleEF	MHD	6.3200e-004	7.7500e-004
tblVehicleEF	MHD	0.07	0.01
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.40	0.02
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	3.9000e-005
tblVehicleEF	MHD	1.5080e-003	1.6610e-003
tblVehicleEF	MHD	0.05	2.5350e-003
tblVehicleEF	MHD	0.05	4.16
tblVehicleEF	MHD	6.3200e-004	7.7500e-004
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.43	0.02
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	7.7620e-003	9.1900e-004
tblVehicleEF	MHD	0.05	3.2200e-003
tblVehicleEF	MHD	0.29	4.84

tblVehicleEF	MHD	0.53	0.13
tblVehicleEF	MHD	6.05	0.29
tblVehicleEF	MHD	156.25	1,162.65
tblVehicleEF	MHD	1,210.28	1,109.36
tblVehicleEF	MHD	57.55	3.85
tblVehicleEF	MHD	0.78	5.14
tblVehicleEF	MHD	1.67	1.28
tblVehicleEF	MHD	11.19	1.96
tblVehicleEF	MHD	3.2360e-003	1.1620e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	3.0960e-003	1.1120e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	3.9020e-003	4.2360e-003
tblVehicleEF	MHD	0.07	3.2940e-003
tblVehicleEF	MHD	0.03	0.20
tblVehicleEF	MHD	1.6400e-003	1.9810e-003
tblVehicleEF	MHD	0.07	0.01
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.37	0.01
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	3.8000e-005
tblVehicleEF	MHD	3.9020e-003	4.2360e-003
tblVehicleEF	MHD	0.07	3.2940e-003
tblVehicleEF	MHD	0.04	3.97

tblVehicleEF	MHD	1.6400e-003	1.9810e-003
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.41	0.02
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	8.9100e-004
tblVehicleEF	MHD	0.06	3.6350e-003
tblVehicleEF	MHD	0.54	6.03
tblVehicleEF	MHD	0.51	0.13
tblVehicleEF	MHD	7.31	0.35
tblVehicleEF	MHD	135.45	1,187.91
tblVehicleEF	MHD	1,210.28	1,109.35
tblVehicleEF	MHD	57.55	3.95
tblVehicleEF	MHD	0.72	5.73
tblVehicleEF	MHD	1.83	1.39
tblVehicleEF	MHD	11.33	1.96
tblVehicleEF	MHD	4.6700e-003	1.5090e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	4.4680e-003	1.4440e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	4.3200e-004	5.1000e-004
tblVehicleEF	MHD	0.05	2.4900e-003
tblVehicleEF	MHD	0.04	0.21
tblVehicleEF	MHD	1.5900e-004	2.0100e-004
tblVehicleEF	MHD	0.07	0.01

SMF Cargo Facility - Mitigated - Sacramento County, Winter

tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.43	0.02
tblVehicleEF	MHD	1.3050e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	3.9000e-005
tblVehicleEF	MHD	4.3200e-004	5.1000e-004
tblVehicleEF	MHD	0.05	2.4900e-003
tblVehicleEF	MHD	0.05	4.32
tblVehicleEF	MHD	1.5900e-004	2.0100e-004
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.47	0.02
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
tblVehicleEF	OBUS	0.88	1.14
tblVehicleEF	OBUS	6.77	1.47
tblVehicleEF	OBUS	128.59	1,671.65
tblVehicleEF	OBUS	1,355.95	1,492.53
tblVehicleEF	OBUS	68.41	11.11
tblVehicleEF	OBUS	0.61	8.80
tblVehicleEF	OBUS	1.94	2.02
tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004

tblVehicleEF	OBUS	1.3200e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
tblVehicleEF	OBUS	0.90	1.18
tblVehicleEF	OBUS	6.09	1.32
tblVehicleEF	OBUS	135.23	1,670.58

tblVehicleEF	OBUS	1,355.95	1,492.59
tblVehicleEF	OBUS	68.41	10.86
tblVehicleEF	OBUS	0.63	8.63
tblVehicleEF	OBUS	1.81	1.87
tblVehicleEF	OBUS	2.82	1.19
tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.04	0.85
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17

tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	0.01
tblVehicleEF	OBUS	0.31	9.85
tblVehicleEF	OBUS	0.86	1.11
tblVehicleEF	OBUS	7.61	1.65
tblVehicleEF	OBUS	119.42	1,673.14
tblVehicleEF	OBUS	1,355.95	1,492.47
tblVehicleEF	OBUS	68.41	11.41
tblVehicleEF	OBUS	0.58	9.03
tblVehicleEF	OBUS	1.99	2.08
tblVehicleEF	OBUS	2.99	1.21
tblVehicleEF	OBUS	1.6800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.81
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.45	0.07
tblVehicleEF	OBUS	1.1510e-003	0.02

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1700e-004	1.1300e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.11	0.13
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.49	0.08
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3810e-003
tblVehicleEF	SBUS	0.07	8.4610e-003
tblVehicleEF	SBUS	6.73	16.57
tblVehicleEF	SBUS	0.65	0.43
tblVehicleEF	SBUS	6.39	1.31
tblVehicleEF	SBUS	1,201.53	3,573.20
tblVehicleEF	SBUS	1,096.07	1,113.09
tblVehicleEF	SBUS	44.67	7.18
tblVehicleEF	SBUS	10.71	40.83
tblVehicleEF	SBUS	4.39	6.66
tblVehicleEF	SBUS	13.82	0.61
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003

tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.34	0.05
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.5700e-004	7.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.57
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.4430e-003
tblVehicleEF	SBUS	0.05	6.7490e-003
tblVehicleEF	SBUS	6.59	16.09
tblVehicleEF	SBUS	0.67	0.43
tblVehicleEF	SBUS	4.25	0.87
tblVehicleEF	SBUS	1,259.83	3,697.06
tblVehicleEF	SBUS	1,096.07	1,113.10

tblVehicleEF	SBUS	44.67	6.45
tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22
tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13

tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11

tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003

tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004

tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08

tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CNW_TL	6.50	85.86
tblVehicleTrips	CNW_TTP	41.00	3.33
tblVehicleTrips	CW_TL	10.00	14.02
tblVehicleTrips	CW_TTP	59.00	96.67
tblVehicleTrips	DV_TP	5.00	0.00

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.68	9.80
tblVehicleTrips	SU_TR	1.68	9.80
tblVehicleTrips	WD_TR	1.68	9.80

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	8.9662	77.6966	69.3680	0.2565	18.2032	2.0454	20.2486	9.9670	1.8818	11.8488	0.0000	26,264.4992	26,264.4992	1.9464	0.0000	26,307.7503
2022	110.5239	72.6294	64.8613	0.2518	14.1563	1.0228	15.1791	3.8302	0.9632	4.7933	0.0000	25,797.1002	25,797.1002	1.6753	0.0000	25,838.9823
Maximum	**110.5239**	**77.6966**	**69.3680**	**0.2565**	**18.2032**	**2.0454**	**20.2486**	**9.9670**	**1.8818**	**11.8488**	**0.0000**	**26,264.4992**	**26,264.4992**	**1.9464**	**0.0000**	**26,307.7503**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	8.9662	77.6966	69.3680	0.2565	13.0961	2.0454	14.2901	3.9067	1.8818	5.7884	0.0000	26,264.4992	26,264.4992	1.9464	0.0000	26,307.7503
2022	110.5239	72.6294	64.8613	0.2518	13.0957	1.0228	14.1185	3.5699	0.9632	4.5330	0.0000	25,797.1002	25,797.1002	1.6753	0.0000	25,838.9823
Maximum	**110.5239**	**77.6966**	**69.3680**	**0.2565**	**13.0961**	**2.0454**	**14.2901**	**3.9067**	**1.8818**	**5.7884**	**0.0000**	**26,264.4992**	**26,264.4992**	**1.9464**	**0.0000**	**26,307.7503**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.06**	**0.00**	**19.81**	**45.81**	**0.00**	**37.98**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	35.5787	106.4402	411.6108	1.1972	116.8574	0.9244	117.7818	31.0493	0.8652	31.9145		122,609.8649	122,609.8649	3.8966		122,707.2798
Total	**59.3788**	**106.4412**	**411.7137**	**1.1972**	**116.8574**	**0.9248**	**117.7822**	**31.0493**	**0.8656**	**31.9149**		**122,610.0850**	**122,610.0850**	**3.8972**	**0.0000**	**122,707.5145**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	35.4667	105.7747	408.2737	1.1849	115.5643	0.9148	116.4791	30.7057	0.8563	31.5620		121,350.4015	121,350.4015	3.8723		121,447.2083
Total	**59.2668**	**105.7756**	**408.3766**	**1.1849**	**115.5643**	**0.9152**	**116.4795**	**30.7057**	**0.8566**	**31.5623**		**121,350.6217**	**121,350.6217**	**3.8729**	**0.0000**	**121,447.4430**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.19	0.63	0.81	1.03	1.11	1.04	1.11	1.11	1.04	1.10	0.00	1.03	1.03	0.62	0.00	1.03

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/14/2021	5	10	
2	Site Preparation	Site Preparation	6/15/2021	7/26/2021	5	30	
3	Grading	Grading	7/27/2021	11/8/2021	5	75	
4	Building Construction	Building Construction	11/9/2021	5/31/2022	5	146	
5	Paving	Paving	6/1/2022	9/30/2022	5	88	
6	Architectural Coating	Architectural Coating	6/1/2022	9/30/2022	5	88	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 55.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,425,000; Non-Residential Outdoor: 475,000; Striped Parking Area: 146,074 (Architectural Coating – sqft)

OffRoad Equipment

SMF Cargo Facility - Mitigated - Sacramento County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,422.00	555.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	284.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**		**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0380	0.3827	1.0100e-003	0.1141	7.7000e-004	0.1149	0.0303	7.1000e-004	0.0310		100.9746	100.9746	2.6900e-003		101.0419
Total	**0.0554**	**0.0380**	**0.3827**	**1.0100e-003**	**0.1141**	**7.7000e-004**	**0.1149**	**0.0303**	**7.1000e-004**	**0.0310**		**100.9746**	**100.9746**	**2.6900e-003**		**101.0419**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**	**0.0000**	**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0380	0.3827	1.0100e-003	0.1052	7.7000e-004	0.1060	0.0281	7.1000e-004	0.0288		100.9746	100.9746	2.6900e-003		101.0419
Total	**0.0554**	**0.0380**	**0.3827**	**1.0100e-003**	**0.1052**	**7.7000e-004**	**0.1060**	**0.0281**	**7.1000e-004**	**0.0288**		**100.9746**	**100.9746**	**2.6900e-003**		**101.0419**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0664	0.0456	0.4593	1.2200e-003	0.1369	9.2000e-004	0.1379	0.0363	8.5000e-004	0.0372		121.1696	121.1696	3.2300e-003		121.2503
Total	**0.0664**	**0.0456**	**0.4593**	**1.2200e-003**	**0.1369**	**9.2000e-004**	**0.1379**	**0.0363**	**8.5000e-004**	**0.0372**		**121.1696**	**121.1696**	**3.2300e-003**		**121.2503**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**7.0458**	**2.0445**	**9.0903**	**3.8730**	**1.8809**	**5.7539**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0664	0.0456	0.4593	1.2200e-003	0.1262	9.2000e-004	0.1271	0.0337	8.5000e-004	0.0345		121.1696	121.1696	3.2300e-003		121.2503
Total	**0.0664**	**0.0456**	**0.4593**	**1.2200e-003**	**0.1262**	**9.2000e-004**	**0.1271**	**0.0337**	**8.5000e-004**	**0.0345**		**121.1696**	**121.1696**	**3.2300e-003**		**121.2503**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0738	0.0507	0.5103	1.3500e-003	0.1521	1.0300e-003	0.1532	0.0404	9.5000e-004	0.0413		134.6329	134.6329	3.5900e-003		134.7226
Total	**0.0738**	**0.0507**	**0.5103**	**1.3500e-003**	**0.1521**	**1.0300e-003**	**0.1532**	**0.0404**	**9.5000e-004**	**0.0413**		**134.6329**	**134.6329**	**3.5900e-003**		**134.7226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.3826**	**1.9853**	**5.3679**	**1.4026**	**1.8265**	**3.2292**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0738	0.0507	0.5103	1.3500e-003	0.1402	1.0300e-003	0.1413	0.0374	9.5000e-004	0.0384		134.6329	134.6329	3.5900e-003		134.7226
Total	**0.0738**	**0.0507**	**0.5103**	**1.3500e-003**	**0.1402**	**1.0300e-003**	**0.1413**	**0.0374**	**9.5000e-004**	**0.0384**		**134.6329**	**134.6329**	**3.5900e-003**		**134.7226**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8169	56.6613	16.5088	0.1335	3.3396	0.1624	3.5020	0.9610	0.1553	1.1163		14,138.7397	14,138.7397	0.8589		14,160.2130
Worker	5.2484	3.6033	36.2841	0.0961	10.8171	0.0730	10.8902	2.8694	0.0673	2.9366		9,572.3956	9,572.3956	0.2551		9,578.7730
Total	**7.0653**	**60.2645**	**52.7928**	**0.2296**	**14.1567**	**0.2354**	**14.3921**	**3.8303**	**0.2226**	**4.0529**		**23,711.1353**	**23,711.1353**	**1.1140**		**23,738.9860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8169	56.6613	16.5088	0.1335	3.1250	0.1624	3.2874	0.9083	0.1553	1.0636		14,138.7397	14,138.7397	0.8589		14,160.2130
Worker	5.2484	3.6033	36.2841	0.0961	9.9711	0.0730	10.0441	2.6617	0.0673	2.7290		9,572.3956	9,572.3956	0.2551		9,578.7730
Total	**7.0653**	**60.2645**	**52.7928**	**0.2296**	**13.0961**	**0.2354**	**13.3315**	**3.5700**	**0.2226**	**3.7926**		**23,711.1353**	**23,711.1353**	**1.1140**		**23,738.9860**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6862	53.7744	15.2252	0.1322	3.3392	0.1427	3.4819	0.9608	0.1365	1.0973		14,013.1111	14,013.1111	0.8346		14,033.9749
Worker	4.9082	3.2394	33.2728	0.0927	10.8171	0.0711	10.8883	2.8694	0.0655	2.9349		9,229.6555	9,229.6555	0.2288		9,235.3752
Total	**6.5944**	**57.0138**	**48.4979**	**0.2249**	**14.1563**	**0.2138**	**14.3701**	**3.8302**	**0.2020**	**4.0322**		**23,242.7666**	**23,242.7666**	**1.0633**		**23,269.3501**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6862	53.7744	15.2252	0.1322	3.1246	0.1427	3.2672	0.9082	0.1365	1.0446		14,013.111 1	14,013.111 1	0.8346		14,033.97 49
Worker	4.9082	3.2394	33.2728	0.0927	9.9711	0.0711	10.0422	2.6617	0.0655	2.7272		9,229.655 5	9,229.655 5	0.2288		9,235.375 2
Total	**6.5944**	**57.0138**	**48.4979**	**0.2249**	**13.0957**	**0.2138**	**13.3095**	**3.5699**	**0.2020**	**3.7718**		**23,242.76 66**	**23,242.76 66**	**1.0633**		**23,269.35 01**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	0.4168					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5196**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0518	0.0342	0.3510	9.8000e-004	0.1141	7.5000e-004	0.1149	0.0303	6.9000e-004	0.0310		97.3592	97.3592	2.4100e-003		97.4196
Total	**0.0518**	**0.0342**	**0.3510**	**9.8000e-004**	**0.1141**	**7.5000e-004**	**0.1149**	**0.0303**	**6.9000e-004**	**0.0310**		**97.3592**	**97.3592**	**2.4100e-003**		**97.4196**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	0.4168					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5196**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0518	0.0342	0.3510	9.8000e-004	0.1052	7.5000e-004	0.1059	0.0281	6.9000e-004	0.0288		97.3592	97.3592	2.4100e-003		97.4196
Total	**0.0518**	**0.0342**	**0.3510**	**9.8000e-004**	**0.1052**	**7.5000e-004**	**0.1059**	**0.0281**	**6.9000e-004**	**0.0288**		**97.3592**	**97.3592**	**2.4100e-003**		**97.4196**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	107.7677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**107.9722**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.9803	0.6470	6.6452	0.0185	2.1604	0.0142	2.1746	0.5731	0.0131	0.5862		1,843.334 9	1,843.334 9	0.0457		1,844.477 2
Total	**0.9803**	**0.6470**	**6.6452**	**0.0185**	**2.1604**	**0.0142**	**2.1746**	**0.5731**	**0.0131**	**0.5862**		**1,843.334 9**	**1,843.334 9**	**0.0457**		**1,844.477 2**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	107.7677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**107.9722**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.9803	0.6470	6.6452	0.0185	1.9914	0.0142	2.0056	0.5316	0.0131	0.5447		1,843.334 9	1,843.334 9	0.0457		1,844.477 2
Total	**0.9803**	**0.6470**	**6.6452**	**0.0185**	**1.9914**	**0.0142**	**2.0056**	**0.5316**	**0.0131**	**0.5447**		**1,843.334 9**	**1,843.334 9**	**0.0457**		**1,844.477 2**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	35.4667	105.7747	408.2737	1.1849	115.5643	0.9148	116.4791	30.7057	0.8563	31.5620		121,350.4015	121,350.4015	3.8723		121,447.2083
Unmitigated	35.5787	106.4402	411.6108	1.1972	116.8574	0.9244	117.7818	31.0493	0.8652	31.9145		122,609.8649	122,609.8649	3.8966		122,707.2798

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	9,310.00	9,310.00	9310.00	55,618,564	55,003,110
Total	9,310.00	9,310.00	9,310.00	55,618,564	55,003,110

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	14.02	0.00	85.86	96.67	0.00	3.33	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Parking Lot	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.578841	0.038733	0.206173	0.118029	0.019040	0.000000	0.000000	0.033300	0.000000	0.000000	0.005884	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Unmitigated	23.8001	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.5982					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5700e-003	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Total	**23.8001**	**9.4000e-004**	**0.1029**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2201**	**0.2201**	**5.8000e-004**		**0.2347**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.5982					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5700e-003	9.4000e-004	0.1029	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2201	0.2201	5.8000e-004		0.2347
Total	**23.8001**	**9.4000e-004**	**0.1029**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2201**	**0.2201**	**5.8000e-004**		**0.2347**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Batch Mix Emissions

PM Emissions from Concrete Batching
EPA AP-42, Section 11.12

Cubic Yards of Cement	>>	84,605
Construction Months		4
Construction Days		88

Uncontrolled - Central Mix Operations		
Pollutant	Tons	lbs/day
PM_{10}	2.51	57.11
$PM_{2.5}$	0.87	19.78

Controlled - Central Mix Operations		
Pollutant	Tons	lbs/day
PM_{10}	0.72	16.34
$PM_{2.5}$	0.67	15.15

Plant Wide Emission Factors Per Yard of Central Mix Concrete

	Uncontrolled			Controlled		
	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
	(lb/yd^3)	(lb/yd^3)	(lbs/yd^3)	(lb/yd^3)	(lb/yd^3)	(lbs/yd^3)
Aggregate delivery to ground storage	0.0064	0.0031	0.0031	0.0064	0.0031	0.0031
Sand delivery to ground storage	0.0015	0.0007	0.0007	0.0015	0.0007	0.0007
Aggregate transfer to conveyor	0.0064	0.0031	0.0031	0.0064	0.0031	0.0031
Sand transfer to conveyor	0.0015	0.0007	0.0007	0.0015	0.0007	0.0007
Aggregate transfer to elevated Storage	0.0064	0.0031	0.0031	0.0064	0.0031	0.0031
Sand transfer to elevated Storage	0.0015	0.0007	0.0007	0.0015	0.0007	0.0007
Cement delivery to silo	0.0002	0.0001	0.0001	0.0002	0.0001	0.0001
Cement supplement delivery to silo	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002
Weigh hopper loading	0.0079	0.0038	0.0038	0.0079	0.0038	0.0038
Central mix loading	0.1613	0.0439	0.005076	0.0051	0.0015	0.0002538
Total	0.1934	0.0594	0.020576	0.0372	0.017	0.0157538

Source: Table 11.12-6, Table 18.1, Table 18.3, AP-42 Section 11.12

SMF Master Plan Update

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government (Civic Center)	267.73	1000sqft	6.15	267,730.00	0
Unrefrigerated Warehouse-No Rail	3,908.26	1000sqft	329.59	3,908,256.00	0
Unenclosed Parking with Elevator	2,252.50	1000sqft	10.30	2,252,500.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.5 **Precipitation Freq (Days)** 58

Climate Zone 6 **Operational Year** 2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr) 343 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - No construction info at this time, assume construction will take 18 months. CO2 intensity factor updated per Table A-8 of the SAC County GHG Thresholds document.

Land Use - Square Footages and Acreage based on plans provided by SMF Airport. Government (Civic Center) = New Concourse/Terminal Expansion

Construction Phase - No Construction info at this time, assume construction will take 18 months, paving and arch coating phases assumed to overlap.

Grading -

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - SMAQMD Rule 403 - Fugitive Dust

Mobile Land Use Mitigation - Require EV infrastructure

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Area Coating -

Area Mitigation - low VOC paint

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	10
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	10
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	10
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	400.00	20.00

tblConstructionPhase	NumDays	240.00	40.00
tblConstructionPhase	NumDays	620.00	60.00
tblConstructionPhase	NumDays	6,200.00	251.00
tblConstructionPhase	NumDays	440.00	65.00
tblConstructionPhase	NumDays	440.00	32.00
tblEnergyUse	NT24E	5.75	7.13
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	NT24NG	0.68	0.00
tblEnergyUse	T24NG	12.42	0.00
tblEnergyUse	T24NG	0.49	0.00
tblLandUse	LandUseSquareFeet	3,908,260.00	3,908,256.00
tblLandUse	LotAcreage	89.72	329.59
tblLandUse	LotAcreage	51.71	10.30
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.18
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	48.11
tblVehicleEF	HHD	1.02	0.46
tblVehicleEF	HHD	3.28	1.8300e-003
tblVehicleEF	HHD	4,159.31	9,153.87
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	22.32	53.94
tblVehicleEF	HHD	3.36	3.68
tblVehicleEF	HHD	19.79	2.45
tblVehicleEF	HHD	0.04	0.05

tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.05
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.63	3.57
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.72	4.09
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.57	0.19

tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	1.77	47.02
tblVehicleEF	HHD	1.03	0.46
tblVehicleEF	HHD	3.02	1.6860e-003
tblVehicleEF	HHD	4,406.18	9,138.56
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	23.04	52.70
tblVehicleEF	HHD	3.15	3.45
tblVehicleEF	HHD	19.77	2.45
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.59	3.73
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.4500e-004	6.7700e-004

tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.68	4.27
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.4500e-004	6.7700e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.65	0.17
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	HHD	3.34	49.62
tblVehicleEF	HHD	1.01	0.46
tblVehicleEF	HHD	3.67	2.0290e-003
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tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	21.33	55.66
tblVehicleEF	HHD	3.43	3.75
tblVehicleEF	HHD	19.81	2.45
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03

tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.3000e-005	1.3000e-005
tblVehicleEF	HHD	5.5610e-003	1.0700e-004
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tblVehicleEF	HHD	1.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.5200e-004	0.00
tblVehicleEF	HHD	4.3000e-005	1.3000e-005
tblVehicleEF	HHD	5.5610e-003	1.0700e-004
tblVehicleEF	HHD	0.78	3.83
tblVehicleEF	HHD	1.6000e-005	4.0000e-006
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tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.11	1.0000e-006
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tblVehicleEF	LDA	1.26	2.30

tblVehicleEF	LDA	252.52	260.95
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tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
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tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
tblVehicleEF	LDA	5.9800e-004	5.4000e-004
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
tblVehicleEF	LDA	5.0150e-003	3.0340e-003
tblVehicleEF	LDA	4.7840e-003	0.05
tblVehicleEF	LDA	0.78	0.89
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tblVehicleEF	LDA	280.47	289.33

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tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
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tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
tblVehicleEF	LDA	5.9400e-004	5.3200e-004
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.0630e-003	2.3890e-003
tblVehicleEF	LDA	7.0460e-003	0.07
tblVehicleEF	LDA	0.58	0.66
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tblVehicleEF	LDA	245.02	253.39
tblVehicleEF	LDA	57.68	55.70

tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
tblVehicleEF	LDA	2.4540e-003	2.5070e-003
tblVehicleEF	LDA	6.0400e-004	5.5100e-004
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
tblVehicleEF	LDT1	0.01	5.4680e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10

tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
tblVehicleEF	LDT1	3.1540e-003	3.0560e-003
tblVehicleEF	LDT1	7.7500e-004	6.5100e-004
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tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.44
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.25	0.45
tblVehicleEF	LDT1	0.01	6.3980e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.70	1.51
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tblVehicleEF	LDT1	346.93	337.97
tblVehicleEF	LDT1	71.71	64.83
tblVehicleEF	LDT1	0.12	0.09
tblVehicleEF	LDT1	0.17	0.27

tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
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tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
tblVehicleEF	LDT1	4.17	3.15
tblVehicleEF	LDT1	304.87	301.05
tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003

tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003

tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01

tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01

tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07
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tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
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tblVehicleEF	LHD1	9.1870e-003	0.10
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tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
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tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
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tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
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tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004

tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	8.6010e-003
tblVehicleEF	LHD2	8.8820e-003	8.3040e-003
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tblVehicleEF	LHD2	0.73	0.81
tblVehicleEF	LHD2	1.31	0.55
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.82
tblVehicleEF	LHD2	24.40	6.82
tblVehicleEF	LHD2	0.11	1.55

tblVehicleEF	LHD2	1.35	1.49
tblVehicleEF	LHD2	0.53	0.17
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
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tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6800e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.6020e-003	0.04

tblVehicleEF	LHD2	0.01	8.7180e-003
tblVehicleEF	LHD2	8.3620e-003	7.8270e-003
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tblVehicleEF	LHD2	0.74	0.82
tblVehicleEF	LHD2	1.20	0.51
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tblVehicleEF	LHD2	720.74	795.84
tblVehicleEF	LHD2	24.40	6.74
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.26	1.40
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tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	3.3510e-003	0.05
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
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tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.14	0.16
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
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tblVehicleEF	LHD2	9.5090e-003	8.8700e-003
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tblVehicleEF	LHD2	24.40	6.92
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tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004

tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0110e-003	7.6850e-003
tblVehicleEF	LHD2	2.7000e-004	6.8000e-005
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003

tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003

tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003

tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.10	0.52

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21

tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07

tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	3.50	0.28

tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
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tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004

tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
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tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
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tblVehicleEF	MHD	0.06	5.3430e-003
tblVehicleEF	MHD	0.41	5.23
tblVehicleEF	MHD	0.52	0.57
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tblVehicleEF	MHD	1,210.28	1,161.69
tblVehicleEF	MHD	57.55	5.26
tblVehicleEF	MHD	0.76	13.01
tblVehicleEF	MHD	1.79	2.35
tblVehicleEF	MHD	11.25	1.48
tblVehicleEF	MHD	3.8380e-003	0.03

tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.6720e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.28
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.40	0.03
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	5.2000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.36
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.7620e-003	6.7130e-003
tblVehicleEF	MHD	0.05	5.0400e-003
tblVehicleEF	MHD	0.29	4.38
tblVehicleEF	MHD	0.53	0.58

tblVehicleEF	MHD	6.05	0.59
tblVehicleEF	MHD	156.25	1,453.84
tblVehicleEF	MHD	1,210.28	1,161.71
tblVehicleEF	MHD	57.55	5.18
tblVehicleEF	MHD	0.78	13.17
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tblVehicleEF	MHD	11.19	1.47
tblVehicleEF	MHD	3.2360e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.0960e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.03	0.27
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.37	0.03
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	5.1000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.04	0.35
tblVehicleEF	MHD	1.6400e-003	8.5880e-003

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tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.41	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	6.5180e-003
tblVehicleEF	MHD	0.06	5.7170e-003
tblVehicleEF	MHD	0.54	6.16
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tblVehicleEF	MHD	7.31	0.71
tblVehicleEF	MHD	135.45	1,386.85
tblVehicleEF	MHD	1,210.28	1,161.68
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tblVehicleEF	MHD	11.33	1.48
tblVehicleEF	MHD	4.6700e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	4.4680e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.29
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.08

tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	1.3050e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	5.3000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.38
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.47	0.03
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
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tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.3200e-004	0.02

tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
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tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
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tblVehicleEF	OBUS	1,355.95	1,492.59

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tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
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tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
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tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	0.01
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tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
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tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
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tblVehicleEF	OBUS	0.01	0.01

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tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
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tblVehicleEF	SBUS	13.82	0.61
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tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
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tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04

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tblVehicleEF	SBUS	0.01	0.08

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tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
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tblVehicleEF	SBUS	0.02	0.12

tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004

tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04

tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03

tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4850	4.7510	3.5150	0.0111	1.0682	0.1397	1.2079	0.4277	0.1292	0.5569	0.0000	1,016.7815	1,016.7815	0.1253	0.0000	1,019.9138
2022	21.2077	13.6517	12.1058	0.0517	2.9280	0.1433	3.0713	0.7941	0.1349	0.9290	0.0000	4,816.0937	4,816.0937	0.2658	0.0000	4,822.7387
Maximum	**21.2077**	**13.6517**	**12.1058**	**0.0517**	**2.9280**	**0.1433**	**3.0713**	**0.7941**	**0.1349**	**0.9290**	**0.0000**	**4,816.0937**	**4,816.0937**	**0.2658**	**0.0000**	**4,822.7387**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4850	4.7510	3.5150	0.0111	0.6558	0.1397	0.7955	0.2326	0.1292	0.3618	0.0000	1,016.7811	1,016.7811	0.1253	0.0000	1,019.9134
2022	21.2077	13.6517	12.1058	0.0517	2.7098	0.1433	2.8530	0.7406	0.1349	0.8755	0.0000	4,816.0933	4,816.0933	0.2658	0.0000	4,822.7384
Maximum	**21.2077**	**13.6517**	**12.1058**	**0.0517**	**2.7098**	**0.1433**	**2.8530**	**0.7406**	**0.1349**	**0.8755**	**0.0000**	**4,816.0933**	**4,816.0933**	**0.2658**	**0.0000**	**4,822.7384**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**15.78**	**0.00**	**14.74**	**20.35**	**0.00**	**16.74**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2021	8-31-2021	1.3817	1.3817
2	9-1-2021	11-30-2021	2.1642	2.1642
3	12-1-2021	2-28-2022	4.5349	4.5349
4	3-1-2022	5-31-2022	4.4886	4.4886
5	6-1-2022	8-31-2022	4.4660	4.4660
6	9-1-2022	9-30-2022	1.4563	1.4563
		Highest	4.5349	4.5349

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	18.4295	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4,135.8904	4,135.8904	0.3497	0.0724	4,166.1921
Mobile	8.3374	16.6773	50.3377	0.1270	10.8467	0.1295	10.9763	2.9033	0.1219	3.0253	0.0000	11,898.3839	11,898.3839	0.7869	0.0000	11,918.0556
Waste						0.0000	0.0000		0.0000	0.0000	1,055.5165	0.0000	1,055.5165	62.3792	0.0000	2,614.9974
Water						0.0000	0.0000		0.0000	0.0000	338.5783	759.5997	1,098.1780	1.2296	0.7496	1,352.2935
Total	**26.7669**	**16.6781**	**50.4199**	**0.1270**	**10.8467**	**0.1298**	**10.9766**	**2.9033**	**0.1222**	**3.0256**	**1,394.0948**	**16,794.0335**	**18,188.1282**	**64.7458**	**0.8219**	**20,051.7086**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	15.4399	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4,026.2310	4,026.2310	0.3404	0.0704	4,055.7293
Mobile	8.3208	16.5598	49.8403	0.1252	10.6792	0.1278	10.8070	2.8585	0.1203	2.9788	0.0000	11,735.1536	11,735.1536	0.7794	0.0000	11,754.6378
Waste						0.0000	0.0000		0.0000	0.0000	527.7582	0.0000	527.7582	31.1896	0.0000	1,307.4987
Water						0.0000	0.0000		0.0000	0.0000	270.8626	610.1472	881.0098	0.9839	0.5997	1,084.3203
Total	**23.7607**	**16.5606**	**49.9225**	**0.1253**	**10.6792**	**0.1281**	**10.8073**	**2.8585**	**0.1206**	**2.9791**	**798.6209**	**16,371.6912**	**17,170.3121**	**33.2937**	**0.6701**	**18,202.3562**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**11.23**	**0.70**	**0.99**	**1.38**	**1.54**	**1.31**	**1.54**	**1.54**	**1.32**	**1.54**	**42.71**	**2.51**	**5.60**	**48.58**	**18.47**	**9.22**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Site Preparation	Site Preparation	6/29/2021	8/23/2021	5	40	
3	Grading	Grading	8/24/2021	11/15/2021	5	60	
4	Building Construction	Building Construction	11/16/2021	11/1/2022	5	251	
5	Architectural Coating	Architectural Coating	10/1/2022	12/31/2022	5	65	
6	Paving	Paving	11/2/2022	12/15/2022	5	32	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 150

Acres of Paving: 10.3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 6,263,979; Non-Residential Outdoor: 2,087,993; Striped Parking Area: 135,150 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2,673.00	1,054.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	535.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0317	0.3144	0.2157	3.9000e-004		0.0155	0.0155		0.0144	0.0144	0.0000	34.0008	34.0008	9.5700e-003	0.0000	34.2400
Total	**0.0317**	**0.3144**	**0.2157**	**3.9000e-004**		**0.0155**	**0.0155**		**0.0144**	**0.0144**	**0.0000**	**34.0008**	**34.0008**	**9.5700e-003**	**0.0000**	**34.2400**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.4000e-004	3.8000e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9429	0.9429	2.0000e-005	0.0000	0.9435
Total	**5.2000e-004**	**3.4000e-004**	**3.8000e-003**	**1.0000e-005**	**1.1000e-003**	**1.0000e-005**	**1.1100e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9429**	**0.9429**	**2.0000e-005**	**0.0000**	**0.9435**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0317	0.3144	0.2157	3.9000e-004		0.0155	0.0155		0.0144	0.0144	0.0000	34.0007	34.0007	9.5700e-003	0.0000	34.2400
Total	**0.0317**	**0.3144**	**0.2157**	**3.9000e-004**		**0.0155**	**0.0155**		**0.0144**	**0.0144**	**0.0000**	**34.0007**	**34.0007**	**9.5700e-003**	**0.0000**	**34.2400**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.4000e-004	3.8000e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.9429	0.9429	2.0000e-005	0.0000	0.9435
Total	**5.2000e-004**	**3.4000e-004**	**3.8000e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9429**	**0.9429**	**2.0000e-005**	**0.0000**	**0.9435**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0778	0.8099	0.4231	7.6000e-004		0.0409	0.0409		0.0376	0.0376	0.0000	66.8714	66.8714	0.0216	0.0000	67.4121
Total	**0.0778**	**0.8099**	**0.4231**	**7.6000e-004**	**0.3613**	**0.0409**	**0.4022**	**0.1986**	**0.0376**	**0.2362**	**0.0000**	**66.8714**	**66.8714**	**0.0216**	**0.0000**	**67.4121**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	8.1000e-004	9.1100e-003	3.0000e-005	2.6400e-003	2.0000e-005	2.6600e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.2629	2.2629	6.0000e-005	0.0000	2.2644
Total	**1.2500e-003**	**8.1000e-004**	**9.1100e-003**	**3.0000e-005**	**2.6400e-003**	**2.0000e-005**	**2.6600e-003**	**7.0000e-004**	**2.0000e-005**	**7.2000e-004**	**0.0000**	**2.2629**	**2.2629**	**6.0000e-005**	**0.0000**	**2.2644**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1409	0.0000	0.1409	0.0775	0.0000	0.0775	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0778	0.8099	0.4231	7.6000e-004		0.0409	0.0409		0.0376	0.0376	0.0000	66.8714	66.8714	0.0216	0.0000	67.4120
Total	**0.0778**	**0.8099**	**0.4231**	**7.6000e-004**	**0.1409**	**0.0409**	**0.1818**	**0.0775**	**0.0376**	**0.1151**	**0.0000**	**66.8714**	**66.8714**	**0.0216**	**0.0000**	**67.4120**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	8.1000e-004	9.1100e-003	3.0000e-005	2.4400e-003	2.0000e-005	2.4600e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2629	2.2629	6.0000e-005	0.0000	2.2644
Total	**1.2500e-003**	**8.1000e-004**	**9.1100e-003**	**3.0000e-005**	**2.4400e-003**	**2.0000e-005**	**2.4600e-003**	**6.5000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.2629**	**2.2629**	**6.0000e-005**	**0.0000**	**2.2644**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2602	0.0000	0.2602	0.1079	0.0000	0.1079	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1257	1.3920	0.9264	1.8600e-003		0.0596	0.0596		0.0548	0.0548	0.0000	163.4849	163.4849	0.0529	0.0000	164.8068
Total	**0.1257**	**1.3920**	**0.9264**	**1.8600e-003**	**0.2602**	**0.0596**	**0.3198**	**0.1079**	**0.0548**	**0.1627**	**0.0000**	**163.4849**	**163.4849**	**0.0529**	**0.0000**	**164.8068**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0800e-003	1.3600e-003	0.0152	4.0000e-005	4.4100e-003	3.0000e-005	4.4400e-003	1.1700e-003	3.0000e-005	1.2000e-003	0.0000	3.7715	3.7715	1.0000e-004	0.0000	3.7740
Total	**2.0800e-003**	**1.3600e-003**	**0.0152**	**4.0000e-005**	**4.4100e-003**	**3.0000e-005**	**4.4400e-003**	**1.1700e-003**	**3.0000e-005**	**1.2000e-003**	**0.0000**	**3.7715**	**3.7715**	**1.0000e-004**	**0.0000**	**3.7740**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1015	0.0000	0.1015	0.0421	0.0000	0.0421	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1257	1.3920	0.9264	1.8600e-003		0.0596	0.0596		0.0548	0.0548	0.0000	163.4848	163.4848	0.0529	0.0000	164.8066
Total	**0.1257**	**1.3920**	**0.9264**	**1.8600e-003**	**0.1015**	**0.0596**	**0.1610**	**0.0421**	**0.0548**	**0.0969**	**0.0000**	**163.4848**	**163.4848**	**0.0529**	**0.0000**	**164.8066**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0800e-003	1.3600e-003	0.0152	4.0000e-005	4.0600e-003	3.0000e-005	4.0900e-003	1.0900e-003	3.0000e-005	1.1200e-003	0.0000	3.7715	3.7715	1.0000e-004	0.0000	3.7740
Total	**2.0800e-003**	**1.3600e-003**	**0.0152**	**4.0000e-005**	**4.0600e-003**	**3.0000e-005**	**4.0900e-003**	**1.0900e-003**	**3.0000e-005**	**1.1200e-003**	**0.0000**	**3.7715**	**3.7715**	**1.0000e-004**	**0.0000**	**3.7740**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0323	0.2964	0.2818	4.6000e-004		0.0163	0.0163		0.0153	0.0153	0.0000	39.3783	39.3783	9.5000e-003	0.0000	39.6158
Total	**0.0323**	**0.2964**	**0.2818**	**4.6000e-004**		**0.0163**	**0.0163**		**0.0153**	**0.0153**	**0.0000**	**39.3783**	**39.3783**	**9.5000e-003**	**0.0000**	**39.6158**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0564	1.8330	0.4899	4.3700e-003	0.1048	5.0600e-003	0.1098	0.0303	4.8400e-003	0.0351	0.0000	420.4362	420.4362	0.0240	0.0000	421.0372
Worker	0.1574	0.1028	1.1501	3.1600e-003	0.3337	2.3300e-003	0.3361	0.0888	2.1500e-003	0.0909	0.0000	285.6326	285.6326	7.5000e-003	0.0000	285.8200
Total	**0.2137**	**1.9358**	**1.6400**	**7.5300e-003**	**0.4385**	**7.3900e-003**	**0.4459**	**0.1190**	**6.9900e-003**	**0.1260**	**0.0000**	**706.0688**	**706.0688**	**0.0315**	**0.0000**	**706.8572**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0323	0.2964	0.2818	4.6000e-004		0.0163	0.0163		0.0153	0.0153	0.0000	39.3783	39.3783	9.5000e-003	0.0000	39.6158
Total	**0.0323**	**0.2964**	**0.2818**	**4.6000e-004**		**0.0163**	**0.0163**		**0.0153**	**0.0153**	**0.0000**	**39.3783**	**39.3783**	**9.5000e-003**	**0.0000**	**39.6158**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0564	1.8330	0.4899	4.3700e-003	0.0981	5.0600e-003	0.1032	0.0286	4.8400e-003	0.0335	0.0000	420.4362	420.4362	0.0240	0.0000	421.0372
Worker	0.1574	0.1028	1.1501	3.1600e-003	0.3078	2.3300e-003	0.3101	0.0824	2.1500e-003	0.0845	0.0000	285.6326	285.6326	7.5000e-003	0.0000	285.8200
Total	**0.2137**	**1.9358**	**1.6400**	**7.5300e-003**	**0.4059**	**7.3900e-003**	**0.4133**	**0.1110**	**6.9900e-003**	**0.1180**	**0.0000**	**706.0688**	**706.0688**	**0.0315**	**0.0000**	**706.8572**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1851	1.6943	1.7754	2.9200e-003		0.0878	0.0878		0.0826	0.0826	0.0000	251.4219	251.4219	0.0602	0.0000	252.9277
Total	**0.1851**	**1.6943**	**1.7754**	**2.9200e-003**		**0.0878**	**0.0878**		**0.0826**	**0.0826**	**0.0000**	**251.4219**	**251.4219**	**0.0602**	**0.0000**	**252.9277**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3338	11.1077	2.8830	0.0277	0.6685	0.0284	0.6969	0.1932	0.0271	0.2203	0.0000	2,659.7850	2,659.7850	0.1491	0.0000	2,663.5112
Worker	0.9385	0.5901	6.7452	0.0195	2.1300	0.0145	2.1445	0.5665	0.0134	0.5799	0.0000	1,757.7106	1,757.7106	0.0430	0.0000	1,758.7857
Total	**1.2723**	**11.6978**	**9.6281**	**0.0471**	**2.7985**	**0.0429**	**2.8414**	**0.7597**	**0.0405**	**0.8002**	**0.0000**	**4,417.4956**	**4,417.4956**	**0.1921**	**0.0000**	**4,422.2969**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1851	1.6943	1.7754	2.9200e-003		0.0878	0.0878		0.0826	0.0826	0.0000	251.4216	251.4216	0.0602	0.0000	252.9274
Total	**0.1851**	**1.6943**	**1.7754**	**2.9200e-003**		**0.0878**	**0.0878**		**0.0826**	**0.0826**	**0.0000**	**251.4216**	**251.4216**	**0.0602**	**0.0000**	**252.9274**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3338	11.1077	2.8830	0.0277	0.6261	0.0284	0.6544	0.1828	0.0271	0.2099	0.0000	2,659.785 0	2,659.785 0	0.1491	0.0000	2,663.5112
Worker	0.9385	0.5901	6.7452	0.0195	1.9643	0.0145	1.9788	0.5259	0.0134	0.5392	0.0000	1,757.710 6	1,757.710 6	0.0430	0.0000	1,758.785 7
Total	**1.2723**	**11.6978**	**9.6281**	**0.0471**	**2.5904**	**0.0429**	**2.6332**	**0.7086**	**0.0405**	**0.7491**	**0.0000**	**4,417.495 6**	**4,417.495 6**	**0.1921**	**0.0000**	**4,422.296 9**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	19.6689					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0458	0.0589	1.0000e-004		2.6600e-003	2.6600e-003		2.6600e-003	2.6600e-003	0.0000	8.2981	8.2981	5.4000e-004	0.0000	8.3116
Total	**19.6756**	**0.0458**	**0.0589**	**1.0000e-004**		**2.6600e-003**	**2.6600e-003**		**2.6600e-003**	**2.6600e-003**	**0.0000**	**8.2981**	**8.2981**	**5.4000e-004**	**0.0000**	**8.3116**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0563	0.0354	0.4044	1.1700e-003	0.1277	8.7000e-004	0.1286	0.0340	8.0000e-004	0.0348	0.0000	105.3794	105.3794	2.5800e-003	0.0000	105.4439
Total	**0.0563**	**0.0354**	**0.4044**	**1.1700e-003**	**0.1277**	**8.7000e-004**	**0.1286**	**0.0340**	**8.0000e-004**	**0.0348**	**0.0000**	**105.3794**	**105.3794**	**2.5800e-003**	**0.0000**	**105.4439**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	19.6689					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0458	0.0589	1.0000e-004		2.6600e-003	2.6600e-003		2.6600e-003	2.6600e-003	0.0000	8.2981	8.2981	5.4000e-004	0.0000	8.3116
Total	**19.6756**	**0.0458**	**0.0589**	**1.0000e-004**		**2.6600e-003**	**2.6600e-003**		**2.6600e-003**	**2.6600e-003**	**0.0000**	**8.2981**	**8.2981**	**5.4000e-004**	**0.0000**	**8.3116**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0563	0.0354	0.4044	1.1700e-003	0.1178	8.7000e-004	0.1186	0.0315	8.0000e-004	0.0323	0.0000	105.3794	105.3794	2.5800e-003	0.0000	105.4439
Total	**0.0563**	**0.0354**	**0.4044**	**1.1700e-003**	**0.1178**	**8.7000e-004**	**0.1186**	**0.0315**	**8.0000e-004**	**0.0323**	**0.0000**	**105.3794**	**105.3794**	**2.5800e-003**	**0.0000**	**105.4439**

3.7 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0177	0.1780	0.2333	3.6000e-004		9.0900e-003	9.0900e-003		8.3600e-003	8.3600e-003	0.0000	32.0441	32.0441	0.0104	0.0000	32.3032
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0177**	**0.1780**	**0.2333**	**3.6000e-004**		**9.0900e-003**	**9.0900e-003**		**8.3600e-003**	**8.3600e-003**	**0.0000**	**32.0441**	**32.0441**	**0.0104**	**0.0000**	**32.3032**

3.7 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	4.9000e-004	5.5800e-003	2.0000e-005	1.7600e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4546	1.4546	4.0000e-005	0.0000	1.4554
Total	**7.8000e-004**	**4.9000e-004**	**5.5800e-003**	**2.0000e-005**	**1.7600e-003**	**1.0000e-005**	**1.7700e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.4546**	**1.4546**	**4.0000e-005**	**0.0000**	**1.4554**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0177	0.1780	0.2333	3.6000e-004		9.0900e-003	9.0900e-003		8.3600e-003	8.3600e-003	0.0000	32.0441	32.0441	0.0104	0.0000	32.3032
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0177**	**0.1780**	**0.2333**	**3.6000e-004**		**9.0900e-003**	**9.0900e-003**		**8.3600e-003**	**8.3600e-003**	**0.0000**	**32.0441**	**32.0441**	**0.0104**	**0.0000**	**32.3032**

3.7 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	4.9000e-004	5.5800e-003	2.0000e-005	1.6300e-003	1.0000e-005	1.6400e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4546	1.4546	4.0000e-005	0.0000	1.4554
Total	**7.8000e-004**	**4.9000e-004**	**5.5800e-003**	**2.0000e-005**	**1.6300e-003**	**1.0000e-005**	**1.6400e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4546**	**1.4546**	**4.0000e-005**	**0.0000**	**1.4554**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement NEV Network

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.3208	16.5598	49.8403	0.1252	10.6792	0.1278	10.8070	2.8585	0.1203	2.9788	0.0000	11,735.1536	11,735.1536	0.7794	0.0000	11,754.6378
Unmitigated	8.3374	16.6773	50.3377	0.1270	10.8467	0.1295	10.9763	2.9033	0.1219	3.0253	0.0000	11,898.3839	11,898.3839	0.7869	0.0000	11,918.0556

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government (Civic Center)	7,475.02	0.00	0.00	10,064,687	9,885,118
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	6,565.88	6,565.88	6565.88	19,095,605	18,824,754
Total	14,040.90	6,565.88	6,565.88	29,160,292	28,709,872

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government (Civic Center)	10.00	5.00	6.50	75.00	20.00	5.00	50	34	16
Unenclosed Parking with	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	10.00	5.00	6.50	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government (Civic Center)	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unenclosed Parking with Elevator	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	4,026.2310	4,026.2310	0.3404	0.0704	4,055.7293
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	4,135.8904	4,135.8904	0.3497	0.0724	4,166.1921
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government (Civic Center)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government (Civic Center)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government (Civic Center)	4.23549e +006	658.9666	0.0557	0.0115	663.7945
Unenclosed Parking with Elevator	4.36985e +006	679.8708	0.0575	0.0119	684.8519
Unrefrigerated Warehouse-No Rail	1.7978e +007	2,797.053 0	0.2365	0.0489	2,817.545 7
Total		**4,135.890 4**	**0.3497**	**0.0724**	**4,166.192 1**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government (Civic Center)	3.8355e +006	596.7355	0.0505	0.0104	601.1075
Unenclosed Parking with Elevator	4.36985e +006	679.8708	0.0575	0.0119	684.8519
Unrefrigerated Warehouse-No Rail	1.76731e +007	2,749.624 7	0.2325	0.0481	2,769.769 9
Total		**4,026.231 0**	**0.3404**	**0.0704**	**4,055.729 3**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	15.4399	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Unmitigated	18.4295	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.9669					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	16.4549					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6400e-003	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Total	**18.4295**	**7.5000e-004**	**0.0822**	**1.0000e-005**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.1595**	**0.1595**	**4.2000e-004**	**0.0000**	**0.1701**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1967					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	15.2355					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6400e-003	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Total	**15.4399**	**7.5000e-004**	**0.0822**	**1.0000e-005**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.1595**	**0.1595**	**4.2000e-004**	**0.0000**	**0.1701**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	881.0098	0.9839	0.5997	1,084.320 3
Unmitigated	1,098.178 0	1.2296	0.7496	1,352.293 5

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government (Civic Center)	53.1872 / 32.5986	77.7997	0.0698	0.0420	92.0460
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	903.785 / 0	1,020.3782	1.1598	0.7076	1,260.2476
Total		**1,098.1780**	**1.2296**	**0.7496**	**1,352.2935**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government (Civic Center)	42.5497 / 30.6101	64.7072	0.0560	0.0336	76.1223
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	723.028 / 0	816.3026	0.9279	0.5661	1,008.1981
Total		**881.0098**	**0.9839**	**0.5997**	**1,084.3203**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	527.7582	31.1896	0.0000	1,307.4987
Unmitigated	1,055.5165	62.3792	0.0000	2,614.9974

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government (Civic Center)	1526.06	309.7764	18.3073	0.0000	767.4579
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	3673.76	745.7401	44.0720	0.0000	1,847.539 5
Total		**1,055.516 5**	**62.3792**	**0.0000**	**2,614.997 4**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government (Civic Center)	763.03	154.8882	9.1536	0.0000	383.7290
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1836.88	372.8700	22.0360	0.0000	923.7697
Total		**527.7582**	**31.1896**	**0.0000**	**1,307.498 7**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Master Plan Update

Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government (Civic Center)	267.73	1000sqft	6.15	267,730.00	0
Unrefrigerated Warehouse-No Rail	3,908.26	1000sqft	329.59	3,908,256.00	0
Unenclosed Parking with Elevator	2,252.50	1000sqft	10.30	2,252,500.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.5 **Precipitation Freq (Days)** 58

Climate Zone 6 **Operational Year** 2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr) 343 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - No construction info at this time, assume construction will take 18 months. CO2 intensity factor updated per Table A-8 of the SAC County GHG Thresholds document.

Land Use - Square Footages and Acreage based on plans provided by SMF Airport. Government (Civic Center) = New Concourse/Terminal Expansion

Construction Phase - No Construction info at this time, assume construction will take 18 months, paving and arch coating phases assumed to overlap.

Grading -

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - SMAQMD Rule 403 - Fugitive Dust

Mobile Land Use Mitigation - Require EV infrastructure

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Area Coating -

Area Mitigation - low VOC paint

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	10
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	10
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	10
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	400.00	20.00

tblConstructionPhase	NumDays	240.00	40.00
tblConstructionPhase	NumDays	620.00	60.00
tblConstructionPhase	NumDays	6,200.00	251.00
tblConstructionPhase	NumDays	440.00	65.00
tblConstructionPhase	NumDays	440.00	32.00
tblEnergyUse	NT24E	5.75	7.13
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	NT24NG	0.68	0.00
tblEnergyUse	T24NG	12.42	0.00
tblEnergyUse	T24NG	0.49	0.00
tblLandUse	LandUseSquareFeet	3,908,260.00	3,908,256.00
tblLandUse	LotAcreage	89.72	329.59
tblLandUse	LotAcreage	51.71	10.30
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.18
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	48.11
tblVehicleEF	HHD	1.02	0.46
tblVehicleEF	HHD	3.28	1.8300e-003
tblVehicleEF	HHD	4,159.31	9,153.87
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	22.32	53.94
tblVehicleEF	HHD	3.36	3.68
tblVehicleEF	HHD	19.79	2.45
tblVehicleEF	HHD	0.04	0.05

tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.05
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.63	3.57
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.72	4.09
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.57	0.19

tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	1.77	47.02
tblVehicleEF	HHD	1.03	0.46
tblVehicleEF	HHD	3.02	1.6860e-003
tblVehicleEF	HHD	4,406.18	9,138.56
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	23.04	52.70
tblVehicleEF	HHD	3.15	3.45
tblVehicleEF	HHD	19.77	2.45
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.59	3.73
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.4500e-004	6.7700e-004

tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.68	4.27
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.4500e-004	6.7700e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.65	0.17
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	HHD	3.34	49.62
tblVehicleEF	HHD	1.01	0.46
tblVehicleEF	HHD	3.67	2.0290e-003
tblVehicleEF	HHD	3,818.40	9,175.02
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	21.33	55.66
tblVehicleEF	HHD	3.43	3.75
tblVehicleEF	HHD	19.81	2.45
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03

tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.3000e-005	1.3000e-005
tblVehicleEF	HHD	5.5610e-003	1.0700e-004
tblVehicleEF	HHD	0.68	3.35
tblVehicleEF	HHD	1.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.5200e-004	0.00
tblVehicleEF	HHD	4.3000e-005	1.3000e-005
tblVehicleEF	HHD	5.5610e-003	1.0700e-004
tblVehicleEF	HHD	0.78	3.83
tblVehicleEF	HHD	1.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.11	1.0000e-006
tblVehicleEF	LDA	4.2860e-003	2.5680e-003
tblVehicleEF	LDA	5.8650e-003	0.06
tblVehicleEF	LDA	0.61	0.70
tblVehicleEF	LDA	1.26	2.30

tblVehicleEF	LDA	252.52	260.95
tblVehicleEF	LDA	57.68	54.60
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
tblVehicleEF	LDA	5.9800e-004	5.4000e-004
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
tblVehicleEF	LDA	5.0150e-003	3.0340e-003
tblVehicleEF	LDA	4.7840e-003	0.05
tblVehicleEF	LDA	0.78	0.89
tblVehicleEF	LDA	1.03	1.90
tblVehicleEF	LDA	280.47	289.33

tblVehicleEF	LDA	57.68	53.81
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
tblVehicleEF	LDA	5.9400e-004	5.3200e-004
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.0630e-003	2.3890e-003
tblVehicleEF	LDA	7.0460e-003	0.07
tblVehicleEF	LDA	0.58	0.66
tblVehicleEF	LDA	1.57	2.88
tblVehicleEF	LDA	245.02	253.39
tblVehicleEF	LDA	57.68	55.70

tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
tblVehicleEF	LDA	2.4540e-003	2.5070e-003
tblVehicleEF	LDA	6.0400e-004	5.5100e-004
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
tblVehicleEF	LDT1	0.01	5.4680e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10

tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
tblVehicleEF	LDT1	3.1540e-003	3.0560e-003
tblVehicleEF	LDT1	7.7500e-004	6.5100e-004
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.44
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.25	0.45
tblVehicleEF	LDT1	0.01	6.3980e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.70	1.51
tblVehicleEF	LDT1	2.71	2.06
tblVehicleEF	LDT1	346.93	337.97
tblVehicleEF	LDT1	71.71	64.83
tblVehicleEF	LDT1	0.12	0.09
tblVehicleEF	LDT1	0.17	0.27

tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	3.4910e-003	3.3440e-003
tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
tblVehicleEF	LDT1	4.17	3.15
tblVehicleEF	LDT1	304.87	301.05
tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003

tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003

tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01

tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01

tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07
tblVehicleEF	LHD1	2.48	0.91
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.90
tblVehicleEF	LHD1	31.04	10.10
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8590e-003
tblVehicleEF	LHD1	3.5700e-004	1.0000e-004

tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
tblVehicleEF	LHD1	31.04	10.41
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004

tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	8.6010e-003
tblVehicleEF	LHD2	8.8820e-003	8.3040e-003
tblVehicleEF	LHD2	0.12	1.80
tblVehicleEF	LHD2	0.73	0.81
tblVehicleEF	LHD2	1.31	0.55
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.82
tblVehicleEF	LHD2	24.40	6.82
tblVehicleEF	LHD2	0.11	1.55

tblVehicleEF	LHD2	1.35	1.49
tblVehicleEF	LHD2	0.53	0.17
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
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tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
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tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6800e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.6020e-003	0.04

tblVehicleEF	LHD2	0.01	8.7180e-003
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tblVehicleEF	LHD2	0.74	0.82
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tblVehicleEF	LHD2	720.74	795.84
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tblVehicleEF	LHD2	0.50	0.16
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	3.3510e-003	0.05
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tblVehicleEF	LHD2	0.01	0.22
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tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003

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tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.4060e-003	0.02
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tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
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tblVehicleEF	LHD2	9.5090e-003	8.8700e-003
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tblVehicleEF	LHD2	24.40	6.92
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.38	1.53
tblVehicleEF	LHD2	0.57	0.19
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004

tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
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tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0110e-003	7.6850e-003
tblVehicleEF	LHD2	2.7000e-004	6.8000e-005
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003

tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003

tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003

tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.10	0.52

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
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tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21

tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
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tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
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tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07

tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	3.50	0.28

tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
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tblVehicleEF	MH	60.21	19.87
tblVehicleEF	MH	1.69	1.73
tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004

tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.16	0.11
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.5850e-003	6.6210e-003
tblVehicleEF	MHD	0.06	5.3430e-003
tblVehicleEF	MHD	0.41	5.23
tblVehicleEF	MHD	0.52	0.57
tblVehicleEF	MHD	6.57	0.64
tblVehicleEF	MHD	147.37	1,425.11
tblVehicleEF	MHD	1,210.28	1,161.69
tblVehicleEF	MHD	57.55	5.26
tblVehicleEF	MHD	0.76	13.01
tblVehicleEF	MHD	1.79	2.35
tblVehicleEF	MHD	11.25	1.48
tblVehicleEF	MHD	3.8380e-003	0.03

tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.6720e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.28
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.40	0.03
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	5.2000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.36
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.7620e-003	6.7130e-003
tblVehicleEF	MHD	0.05	5.0400e-003
tblVehicleEF	MHD	0.29	4.38
tblVehicleEF	MHD	0.53	0.58

tblVehicleEF	MHD	6.05	0.59
tblVehicleEF	MHD	156.25	1,453.84
tblVehicleEF	MHD	1,210.28	1,161.71
tblVehicleEF	MHD	57.55	5.18
tblVehicleEF	MHD	0.78	13.17
tblVehicleEF	MHD	1.67	2.20
tblVehicleEF	MHD	11.19	1.47
tblVehicleEF	MHD	3.2360e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.0960e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.03	0.27
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.37	0.03
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	5.1000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.04	0.35
tblVehicleEF	MHD	1.6400e-003	8.5880e-003

tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.41	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	6.5180e-003
tblVehicleEF	MHD	0.06	5.7170e-003
tblVehicleEF	MHD	0.54	6.16
tblVehicleEF	MHD	0.51	0.56
tblVehicleEF	MHD	7.31	0.71
tblVehicleEF	MHD	135.45	1,386.85
tblVehicleEF	MHD	1,210.28	1,161.68
tblVehicleEF	MHD	57.55	5.38
tblVehicleEF	MHD	0.72	12.79
tblVehicleEF	MHD	1.83	2.40
tblVehicleEF	MHD	11.33	1.48
tblVehicleEF	MHD	4.6700e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	4.4680e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.29
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.08

tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	1.3050e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	5.3000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.38
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.47	0.03
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
tblVehicleEF	OBUS	0.88	1.14
tblVehicleEF	OBUS	6.77	1.47
tblVehicleEF	OBUS	128.59	1,671.65
tblVehicleEF	OBUS	1,355.95	1,492.53
tblVehicleEF	OBUS	68.41	11.11
tblVehicleEF	OBUS	0.61	8.80
tblVehicleEF	OBUS	1.94	2.02
tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.3200e-004	0.02

tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
tblVehicleEF	OBUS	0.90	1.18
tblVehicleEF	OBUS	6.09	1.32
tblVehicleEF	OBUS	135.23	1,670.58
tblVehicleEF	OBUS	1,355.95	1,492.59

tblVehicleEF	OBUS	68.41	10.86
tblVehicleEF	OBUS	0.63	8.63
tblVehicleEF	OBUS	1.81	1.87
tblVehicleEF	OBUS	2.82	1.19
tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.04	0.85
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07

tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	0.01
tblVehicleEF	OBUS	0.31	9.85
tblVehicleEF	OBUS	0.86	1.11
tblVehicleEF	OBUS	7.61	1.65
tblVehicleEF	OBUS	119.42	1,673.14
tblVehicleEF	OBUS	1,355.95	1,492.47
tblVehicleEF	OBUS	68.41	11.41
tblVehicleEF	OBUS	0.58	9.03
tblVehicleEF	OBUS	1.99	2.08
tblVehicleEF	OBUS	2.99	1.21
tblVehicleEF	OBUS	1.6800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.81
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.45	0.07
tblVehicleEF	OBUS	1.1510e-003	0.02
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	8.1700e-004	1.1300e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.11	0.13
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.49	0.08
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3810e-003
tblVehicleEF	SBUS	0.07	8.4610e-003
tblVehicleEF	SBUS	6.73	16.57
tblVehicleEF	SBUS	0.65	0.43
tblVehicleEF	SBUS	6.39	1.31
tblVehicleEF	SBUS	1,201.53	3,573.20
tblVehicleEF	SBUS	1,096.07	1,113.09
tblVehicleEF	SBUS	44.67	7.18
tblVehicleEF	SBUS	10.71	40.83
tblVehicleEF	SBUS	4.39	6.66
tblVehicleEF	SBUS	13.82	0.61
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04

tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.34	0.05
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.5700e-004	7.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.57
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.4430e-003
tblVehicleEF	SBUS	0.05	6.7490e-003
tblVehicleEF	SBUS	6.59	16.09
tblVehicleEF	SBUS	0.67	0.43
tblVehicleEF	SBUS	4.25	0.87
tblVehicleEF	SBUS	1,259.83	3,697.06
tblVehicleEF	SBUS	1,096.07	1,113.10
tblVehicleEF	SBUS	44.67	6.45

tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22
tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.08

tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.02	0.12

tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004

tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04

tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03

tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	15.8712	128.7803	123.5715	0.4928	26.6757	2.0454	28.0619	9.9670	1.8818	11.8488	0.0000	50,601.1198	50,601.1198	2.6674	0.0000	50,667.8058
2022	622.1313	123.5904	131.4640	0.5256	30.7447	1.3055	32.0501	8.2979	1.2339	9.5319	0.0000	53,861.9854	53,861.9854	2.6812	0.0000	53,929.0154
Maximum	**622.1313**	**128.7803**	**131.4640**	**0.5256**	**30.7447**	**2.0454**	**32.0501**	**9.9670**	**1.8818**	**11.8488**	**0.0000**	**53,861.9854**	**53,861.9854**	**2.6812**	**0.0000**	**53,929.0154**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	15.8712	128.7803	123.5715	0.4928	24.6778	2.0454	26.0640	6.7283	1.8818	8.0337	0.0000	50,601.1198	50,601.1198	2.6674	0.0000	50,667.8058
2022	622.1313	123.5904	131.4640	0.5256	28.4285	1.3055	29.7339	7.7294	1.2339	8.9633	0.0000	53,861.9854	53,861.9854	2.6812	0.0000	53,929.0154
Maximum	**622.1313**	**128.7803**	**131.4640**	**0.5256**	**28.4285**	**2.0454**	**29.7339**	**7.7294**	**1.8818**	**8.9633**	**0.0000**	**53,861.9854**	**53,861.9854**	**2.6812**	**0.0000**	**53,929.0154**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**7.51**	**0.00**	**7.18**	**20.84**	**0.00**	**20.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	101.0026	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	82.9312	101.6326	346.7065	0.8506	70.2197	0.8074	71.0271	18.7425	0.7599	19.5024		87,753.9157	87,753.9157	5.2898		87,886.1615
Total	**183.9338**	**101.6386**	**347.3638**	**0.8507**	**70.2197**	**0.8098**	**71.0295**	**18.7425**	**0.7623**	**19.5048**		**87,755.3226**	**87,755.3226**	**5.2935**	**0.0000**	**87,887.6611**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	84.6213	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	82.8204	100.9385	342.8682	0.8387	69.1146	0.7966	69.9112	18.4476	0.7497	19.1972		86,522.4144	86,522.4144	5.2355		86,653.3020
Total	**167.4417**	**100.9445**	**343.5256**	**0.8387**	**69.1146**	**0.7989**	**69.9135**	**18.4476**	**0.7520**	**19.1996**		**86,523.8212**	**86,523.8212**	**5.2392**	**0.0000**	**86,654.8017**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	8.97	0.68	1.10	1.41	1.57	1.34	1.57	1.57	1.35	1.56	0.00	1.40	1.40	1.03	0.00	1.40

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Site Preparation	Site Preparation	6/29/2021	8/23/2021	5	40	
3	Grading	Grading	8/24/2021	11/15/2021	5	60	
4	Building Construction	Building Construction	11/16/2021	11/1/2022	5	251	
5	Architectural Coating	Architectural Coating	10/1/2022	12/31/2022	5	65	
6	Paving	Paving	11/2/2022	12/15/2022	5	32	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 150

Acres of Paving: 10.3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 6,263,979; Non-Residential Outdoor: 2,087,993; Striped Parking Area: 135,150 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2,673.00	1,054.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	535.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0308	0.4487	1.1500e-003	0.1141	7.7000e-004	0.1149	0.0303	7.1000e-004	0.0310		114.9719	114.9719	3.0600e-003		115.0483
Total	**0.0601**	**0.0308**	**0.4487**	**1.1500e-003**	**0.1141**	**7.7000e-004**	**0.1149**	**0.0303**	**7.1000e-004**	**0.0310**		**114.9719**	**114.9719**	**3.0600e-003**		**115.0483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0308	0.4487	1.1500e-003	0.1052	7.7000e-004	0.1060	0.0281	7.1000e-004	0.0288		114.9719	114.9719	3.0600e-003		115.0483
Total	**0.0601**	**0.0308**	**0.4487**	**1.1500e-003**	**0.1052**	**7.7000e-004**	**0.1060**	**0.0281**	**7.1000e-004**	**0.0288**		**114.9719**	**114.9719**	**3.0600e-003**		**115.0483**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0721	0.0369	0.5385	1.3900e-003	0.1369	9.2000e-004	0.1379	0.0363	8.5000e-004	0.0372		137.9662	137.9662	3.6700e-003		138.0580
Total	**0.0721**	**0.0369**	**0.5385**	**1.3900e-003**	**0.1369**	**9.2000e-004**	**0.1379**	**0.0363**	**8.5000e-004**	**0.0372**		**137.9662**	**137.9662**	**3.6700e-003**		**138.0580**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**7.0458**	**2.0445**	**9.0903**	**3.8730**	**1.8809**	**5.7539**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0721	0.0369	0.5385	1.3900e-003	0.1262	9.2000e-004	0.1271	0.0337	8.5000e-004	0.0345		137.9662	137.9662	3.6700e-003		138.0580
Total	**0.0721**	**0.0369**	**0.5385**	**1.3900e-003**	**0.1262**	**9.2000e-004**	**0.1271**	**0.0337**	**8.5000e-004**	**0.0345**		**137.9662**	**137.9662**	**3.6700e-003**		**138.0580**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0802	0.0410	0.5983	1.5400e-003	0.1521	1.0300e-003	0.1532	0.0404	9.5000e-004	0.0413		153.2958	153.2958	4.0800e-003		153.3978
Total	**0.0802**	**0.0410**	**0.5983**	**1.5400e-003**	**0.1521**	**1.0300e-003**	**0.1532**	**0.0404**	**9.5000e-004**	**0.0413**		**153.2958**	**153.2958**	**4.0800e-003**		**153.3978**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.3826**	**1.9853**	**5.3679**	**1.4026**	**1.8265**	**3.2292**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0802	0.0410	0.5983	1.5400e-003	0.1402	1.0300e-003	0.1413	0.0374	9.5000e-004	0.0384		153.2958	153.2958	4.0800e-003		153.3978
Total	**0.0802**	**0.0410**	**0.5983**	**1.5400e-003**	**0.1402**	**1.0300e-003**	**0.1413**	**0.0374**	**9.5000e-004**	**0.0384**		**153.2958**	**153.2958**	**4.0800e-003**		**153.3978**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2572	105.8642	27.0324	0.2601	6.3422	0.2904	6.6326	1.8250	0.2777	2.1027		27,559.7713	27,559.7713	1.5063		27,597.4275
Worker	10.7132	5.4840	79.9639	0.2058	20.3335	0.1372	20.4707	5.3937	0.1265	5.5201		20,487.9846	20,487.9846	0.5452		20,501.6141
Total	**13.9703**	**111.3482**	**106.9963**	**0.4659**	**26.6757**	**0.4276**	**27.1033**	**7.2187**	**0.4042**	**7.6228**		**48,047.7559**	**48,047.7559**	**2.0514**		**48,099.0415**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2572	105.8642	27.0324	0.2601	5.9346	0.2904	6.2250	1.7250	0.2777	2.0027		27,559.7713	27,559.7713	1.5063		27,597.4275
Worker	10.7132	5.4840	79.9639	0.2058	18.7432	0.1372	18.8804	5.0033	0.1265	5.1298		20,487.9846	20,487.9846	0.5452		20,501.6141
Total	**13.9703**	**111.3482**	**106.9963**	**0.4659**	**24.6778**	**0.4276**	**25.1054**	**6.7283**	**0.4042**	**7.1325**		**48,047.7559**	**48,047.7559**	**2.0514**		**48,099.0415**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.0222	100.6468	24.9069	0.2577	6.3414	0.2543	6.5958	1.8247	0.2433	2.0680		27,319.3649	27,319.3649	1.4628		27,355.9350
Worker	9.9998	4.9323	73.6409	0.1984	20.3335	0.1337	20.4672	5.3937	0.1232	5.5168		19,753.2357	19,753.2357	0.4901		19,765.4869
Total	**13.0220**	**105.5791**	**98.5478**	**0.4560**	**26.6749**	**0.3880**	**27.0629**	**7.2184**	**0.3664**	**7.5848**		**47,072.6006**	**47,072.6006**	**1.9529**		**47,121.4219**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.0222	100.6468	24.9069	0.2577	5.9338	0.2543	6.1882	1.7247	0.2433	1.9679		27,319.3649	27,319.3649	1.4628		27,355.9350
Worker	9.9998	4.9323	73.6409	0.1984	18.7432	0.1337	18.8769	5.0033	0.1232	5.1265		19,753.2357	19,753.2357	0.4901		19,765.4869
Total	**13.0220**	**105.5791**	**98.5478**	**0.4560**	**24.6770**	**0.3880**	**25.0650**	**6.7280**	**0.3664**	**7.0944**		**47,072.6006**	**47,072.6006**	**1.9529**		**47,121.4219**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	605.1971					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**605.4016**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	2.0015	0.9872	14.7392	0.0397	4.0697	0.0268	4.0965	1.0795	0.0247	1.1042		3,953.603 1	3,953.603 1	0.0981		3,956.055 2
Total	**2.0015**	**0.9872**	**14.7392**	**0.0397**	**4.0697**	**0.0268**	**4.0965**	**1.0795**	**0.0247**	**1.1042**		**3,953.603 1**	**3,953.603 1**	**0.0981**		**3,956.055 2**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	605.1971					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**605.4016**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	2.0015	0.9872	14.7392	0.0397	3.7514	0.0268	3.7782	1.0014	0.0247	1.0261		3,953.603 1	3,953.603 1	0.0981		3,956.055 2
Total	**2.0015**	**0.9872**	**14.7392**	**0.0397**	**3.7514**	**0.0268**	**3.7782**	**1.0014**	**0.0247**	**1.0261**		**3,953.603 1**	**3,953.603 1**	**0.0981**		**3,956.055 2**

3.7 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

3.7 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0277	0.4133	1.1100e-003	0.1141	7.5000e-004	0.1149	0.0303	6.9000e-004	0.0310		110.8487	110.8487	2.7500e-003		110.9174
Total	**0.0561**	**0.0277**	**0.4133**	**1.1100e-003**	**0.1141**	**7.5000e-004**	**0.1149**	**0.0303**	**6.9000e-004**	**0.0310**		**110.8487**	**110.8487**	**2.7500e-003**		**110.9174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.7 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0277	0.4133	1.1100e-003	0.1052	7.5000e-004	0.1059	0.0281	6.9000e-004	0.0288		110.8487	110.8487	2.7500e-003		110.9174
Total	**0.0561**	**0.0277**	**0.4133**	**1.1100e-003**	**0.1052**	**7.5000e-004**	**0.1059**	**0.0281**	**6.9000e-004**	**0.0288**		**110.8487**	**110.8487**	**2.7500e-003**		**110.9174**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement NEV Network

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	82.8204	100.9385	342.8682	0.8387	69.1146	0.7966	69.9112	18.4476	0.7497	19.1972		86,522.4144	86,522.4144	5.2355		86,653.3020
Unmitigated	82.9312	101.6326	346.7065	0.8506	70.2197	0.8074	71.0271	18.7425	0.7599	19.5024		87,753.9157	87,753.9157	5.2898		87,886.1615

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government (Civic Center)	7,475.02	0.00	0.00	10,064,687	9,885,118
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	6,565.88	6,565.88	6565.88	19,095,605	18,824,754
Total	14,040.90	6,565.88	6,565.88	29,160,292	28,709,872

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government (Civic Center)	10.00	5.00	6.50	75.00	20.00	5.00	50	34	16
Unenclosed Parking with	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	10.00	5.00	6.50	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government (Civic Center)	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unenclosed Parking with Elevator	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government (Civic Center)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government (Civic Center)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	84.6213	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Unmitigated	101.0026	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	10.7775					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	90.1639					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0611	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Total	**101.0026**	**6.0000e-003**	**0.6574**	**5.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.3500e-003**	**2.3500e-003**		**1.4069**	**1.4069**	**3.7100e-003**		**1.4997**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.0778					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	83.4824					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0611	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Total	**84.6213**	**6.0000e-003**	**0.6574**	**5.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.3500e-003**	**2.3500e-003**		**1.4069**	**1.4069**	**3.7100e-003**		**1.4997**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Master Plan Update
Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government (Civic Center)	267.73	1000sqft	6.15	267,730.00	0
Unrefrigerated Warehouse-No Rail	3,908.26	1000sqft	329.59	3,908,256.00	0
Unenclosed Parking with Elevator	2,252.50	1000sqft	10.30	2,252,500.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.5 **Precipitation Freq (Days)** 58

Climate Zone 6 **Operational Year** 2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr) 343 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - No construction info at this time, assume construction will take 18 months. CO2 intensity factor updated per Table A-8 of the SAC County GHG Thresholds document.

Land Use - Square Footages and Acreage based on plans provided by SMF Airport. Government (Civic Center) = New Concourse/Terminal Expansion

Construction Phase - No Construction info at this time, assume construction will take 18 months, paving and arch coating phases assumed to overlap.

Grading -

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - SMAQMD Rule 403 - Fugitive Dust

Mobile Land Use Mitigation - Require EV infrastructure

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Area Coating -

Area Mitigation - low VOC paint

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	10
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	10
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	10
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	400.00	20.00

tblConstructionPhase	NumDays	240.00	40.00
tblConstructionPhase	NumDays	620.00	60.00
tblConstructionPhase	NumDays	6,200.00	251.00
tblConstructionPhase	NumDays	440.00	65.00
tblConstructionPhase	NumDays	440.00	32.00
tblEnergyUse	NT24E	5.75	7.13
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	NT24NG	0.68	0.00
tblEnergyUse	T24NG	12.42	0.00
tblEnergyUse	T24NG	0.49	0.00
tblLandUse	LandUseSquareFeet	3,908,260.00	3,908,256.00
tblLandUse	LotAcreage	89.72	329.59
tblLandUse	LotAcreage	51.71	10.30
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.18
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	48.11
tblVehicleEF	HHD	1.02	0.46
tblVehicleEF	HHD	3.28	1.8300e-003
tblVehicleEF	HHD	4,159.31	9,153.87
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	22.32	53.94
tblVehicleEF	HHD	3.36	3.68
tblVehicleEF	HHD	19.79	2.45
tblVehicleEF	HHD	0.04	0.05

tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.05
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.63	3.57
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.72	4.09
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.57	0.19

tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	1.77	47.02
tblVehicleEF	HHD	1.03	0.46
tblVehicleEF	HHD	3.02	1.6860e-003
tblVehicleEF	HHD	4,406.18	9,138.56
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	23.04	52.70
tblVehicleEF	HHD	3.15	3.45
tblVehicleEF	HHD	19.77	2.45
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
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tblVehicleEF	HHD	0.03	0.04
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tblVehicleEF	HHD	8.6320e-003	8.7710e-003
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tblVehicleEF	HHD	8.3000e-005	1.0000e-006
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tblVehicleEF	HHD	6.4540e-003	1.2400e-004
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tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.4500e-004	6.7700e-004

tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.68	4.27
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.4500e-004	6.7700e-004
tblVehicleEF	HHD	0.10	1.0000e-006
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tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	HHD	3.34	49.62
tblVehicleEF	HHD	1.01	0.46
tblVehicleEF	HHD	3.67	2.0290e-003
tblVehicleEF	HHD	3,818.40	9,175.02
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	21.33	55.66
tblVehicleEF	HHD	3.43	3.75
tblVehicleEF	HHD	19.81	2.45
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tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03

tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.03	0.03
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tblVehicleEF	HHD	1.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.5200e-004	0.00
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tblVehicleEF	HHD	5.5610e-003	1.0700e-004
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tblVehicleEF	HHD	1.6000e-005	4.0000e-006
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tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.11	1.0000e-006
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tblVehicleEF	LDA	1.26	2.30

tblVehicleEF	LDA	252.52	260.95
tblVehicleEF	LDA	57.68	54.60
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tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
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tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
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tblVehicleEF	LDA	4.7840e-003	0.05
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tblVehicleEF	LDA	0.07	0.19
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tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
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tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
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tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.07	0.23
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tblVehicleEF	LDA	245.02	253.39
tblVehicleEF	LDA	57.68	55.70

tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
tblVehicleEF	LDA	2.4540e-003	2.5070e-003
tblVehicleEF	LDA	6.0400e-004	5.5100e-004
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
tblVehicleEF	LDT1	0.01	5.4680e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10

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tblVehicleEF	LDT1	0.19	0.29
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tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
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tblVehicleEF	LDT1	0.31	0.23
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tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
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tblVehicleEF	LDT1	0.19	0.79
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tblVehicleEF	LDT1	0.19	0.79
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tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
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tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
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tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003

tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
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tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
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tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
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tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
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tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003

tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
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tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
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tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
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tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
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tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

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tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
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tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01

tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01

tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07
tblVehicleEF	LHD1	2.48	0.91
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.90
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tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
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tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
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tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
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tblVehicleEF	LHD1	3.5700e-004	1.0000e-004

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tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
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tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
tblVehicleEF	LHD1	31.04	10.41
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004

tblVehicleEF	LHD1	1.0290e-003	0.01
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tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
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tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	8.6010e-003
tblVehicleEF	LHD2	8.8820e-003	8.3040e-003
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tblVehicleEF	LHD2	0.73	0.81
tblVehicleEF	LHD2	1.31	0.55
tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.82
tblVehicleEF	LHD2	24.40	6.82
tblVehicleEF	LHD2	0.11	1.55

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tblVehicleEF	LHD2	0.53	0.17
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tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
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tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
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tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
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tblVehicleEF	LHD2	2.6800e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.6020e-003	0.04

tblVehicleEF	LHD2	0.01	8.7180e-003
tblVehicleEF	LHD2	8.3620e-003	7.8270e-003
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tblVehicleEF	LHD2	0.74	0.82
tblVehicleEF	LHD2	1.20	0.51
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tblVehicleEF	LHD2	720.74	795.84
tblVehicleEF	LHD2	24.40	6.74
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.26	1.40
tblVehicleEF	LHD2	0.50	0.16
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	3.3510e-003	0.05
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
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tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.14	0.16
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	3.6020e-003	0.04
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tblVehicleEF	LHD2	9.5090e-003	8.8700e-003
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tblVehicleEF	LHD2	24.40	6.92
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.38	1.53
tblVehicleEF	LHD2	0.57	0.19
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004

tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0110e-003	7.6850e-003
tblVehicleEF	LHD2	2.7000e-004	6.8000e-005
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003

tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003

tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003

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tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
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tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.10	0.52

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21

tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
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tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07

tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	3.50	0.28

tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
tblVehicleEF	MH	1.69	1.73
tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004

tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
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tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
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tblVehicleEF	MHD	0.06	5.3430e-003
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tblVehicleEF	MHD	0.52	0.57
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tblVehicleEF	MHD	1,210.28	1,161.69
tblVehicleEF	MHD	57.55	5.26
tblVehicleEF	MHD	0.76	13.01
tblVehicleEF	MHD	1.79	2.35
tblVehicleEF	MHD	11.25	1.48
tblVehicleEF	MHD	3.8380e-003	0.03

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tblVehicleEF	MHD	3.6720e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
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tblVehicleEF	MHD	0.04	0.28
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
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tblVehicleEF	MHD	0.40	0.03
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
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tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.36
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.7620e-003	6.7130e-003
tblVehicleEF	MHD	0.05	5.0400e-003
tblVehicleEF	MHD	0.29	4.38
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tblVehicleEF	MHD	6.05	0.59
tblVehicleEF	MHD	156.25	1,453.84
tblVehicleEF	MHD	1,210.28	1,161.71
tblVehicleEF	MHD	57.55	5.18
tblVehicleEF	MHD	0.78	13.17
tblVehicleEF	MHD	1.67	2.20
tblVehicleEF	MHD	11.19	1.47
tblVehicleEF	MHD	3.2360e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.0960e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.03	0.27
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.37	0.03
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	5.1000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.04	0.35
tblVehicleEF	MHD	1.6400e-003	8.5880e-003

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tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.41	0.03
tblVehicleEF	MHD	0.02	0.04
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tblVehicleEF	MHD	0.06	5.7170e-003
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tblVehicleEF	MHD	0.51	0.56
tblVehicleEF	MHD	7.31	0.71
tblVehicleEF	MHD	135.45	1,386.85
tblVehicleEF	MHD	1,210.28	1,161.68
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tblVehicleEF	MHD	11.33	1.48
tblVehicleEF	MHD	4.6700e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	4.4680e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.29
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.08

tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	1.3050e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	5.3000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.38
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.47	0.03
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tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
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tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.3200e-004	0.02

tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
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tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
tblVehicleEF	OBUS	0.90	1.18
tblVehicleEF	OBUS	6.09	1.32
tblVehicleEF	OBUS	135.23	1,670.58
tblVehicleEF	OBUS	1,355.95	1,492.59

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tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
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tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
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tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
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tblVehicleEF	OBUS	0.42	0.07

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tblVehicleEF	OBUS	0.01	0.01
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tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
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tblVehicleEF	OBUS	0.06	1.02
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tblVehicleEF	SBUS	13.82	0.61
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tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
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tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04

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tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
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tblVehicleEF	SBUS	0.02	0.12

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tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
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tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
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tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
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tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
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tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04

tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03

tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	15.2170	131.8107	116.1318	0.4611	26.6757	2.0454	28.0800	9.9670	1.8818	11.8488	0.0000	47,397.9120	47,397.9120	2.7267	0.0000	47,466.0802
2022	621.3829	126.4550	122.1537	0.4900	30.7447	1.3221	32.0668	8.2979	1.2499	9.5478	0.0000	50,269.9634	50,269.9634	2.7313	0.0000	50,338.2461
Maximum	**621.3829**	**131.8107**	**122.1537**	**0.4900**	**30.7447**	**2.0454**	**32.0668**	**9.9670**	**1.8818**	**11.8488**	**0.0000**	**50,269.9634**	**50,269.9634**	**2.7313**	**0.0000**	**50,338.2461**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	15.2170	131.8107	116.1318	0.4611	24.6778	2.0454	26.0821	6.7283	1.8818	8.0510	0.0000	47,397.9120	47,397.9120	2.7267	0.0000	47,466.0802
2022	621.3829	126.4550	122.1537	0.4900	28.4285	1.3221	29.7506	7.7294	1.2499	8.9793	0.0000	50,269.9634	50,269.9634	2.7313	0.0000	50,338.2461
Maximum	**621.3829**	**131.8107**	**122.1537**	**0.4900**	**28.4285**	**2.0454**	**29.7506**	**7.7294**	**1.8818**	**8.9793**	**0.0000**	**50,269.9634**	**50,269.9634**	**2.7313**	**0.0000**	**50,338.2461**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**7.51**	**0.00**	**7.17**	**20.84**	**0.00**	**20.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	101.0026	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	43.4159	110.7083	334.7155	0.7844	70.2197	0.8260	71.0457	18.7425	0.7777	19.5202		81,055.9122	81,055.9122	5.8215		81,201.4508
Total	**144.4185**	**110.7143**	**335.3728**	**0.7845**	**70.2197**	**0.8284**	**71.0481**	**18.7425**	**0.7801**	**19.5226**		**81,057.3191**	**81,057.3191**	**5.8253**	**0.0000**	**81,202.9505**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	84.6213	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	43.3097	109.9241	331.6318	0.7735	69.1146	0.8151	69.9298	18.4476	0.7675	19.2150		79,930.5477	79,930.5477	5.7692		80,074.7778
Total	**127.9310**	**109.9301**	**332.2892**	**0.7736**	**69.1146**	**0.8175**	**69.9321**	**18.4476**	**0.7698**	**19.2174**		**79,931.9546**	**79,931.9546**	**5.7729**	**0.0000**	**80,076.2774**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**11.42**	**0.71**	**0.92**	**1.39**	**1.57**	**1.32**	**1.57**	**1.57**	**1.32**	**1.56**	**0.00**	**1.39**	**1.39**	**0.90**	**0.00**	**1.39**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Site Preparation	Site Preparation	6/29/2021	8/23/2021	5	40	
3	Grading	Grading	8/24/2021	11/15/2021	5	60	
4	Building Construction	Building Construction	11/16/2021	11/1/2022	5	251	
5	Architectural Coating	Architectural Coating	10/1/2022	12/31/2022	5	65	
6	Paving	Paving	11/2/2022	12/15/2022	5	32	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 150

Acres of Paving: 10.3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 6,263,979; Non-Residential Outdoor: 2,087,993; Striped Parking Area: 135,150 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2,673.00	1,054.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	535.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0380	0.3827	1.0100e-003	0.1141	7.7000e-004	0.1149	0.0303	7.1000e-004	0.0310		100.9746	100.9746	2.6900e-003		101.0419
Total	**0.0554**	**0.0380**	**0.3827**	**1.0100e-003**	**0.1141**	**7.7000e-004**	**0.1149**	**0.0303**	**7.1000e-004**	**0.0310**		**100.9746**	**100.9746**	**2.6900e-003**		**101.0419**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**	**0.0000**	**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0380	0.3827	1.0100e-003	0.1052	7.7000e-004	0.1060	0.0281	7.1000e-004	0.0288		100.9746	100.9746	2.6900e-003		101.0419
Total	**0.0554**	**0.0380**	**0.3827**	**1.0100e-003**	**0.1052**	**7.7000e-004**	**0.1060**	**0.0281**	**7.1000e-004**	**0.0288**		**100.9746**	**100.9746**	**2.6900e-003**		**101.0419**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0664	0.0456	0.4593	1.2200e-003	0.1369	9.2000e-004	0.1379	0.0363	8.5000e-004	0.0372		121.1696	121.1696	3.2300e-003		121.2503
Total	**0.0664**	**0.0456**	**0.4593**	**1.2200e-003**	**0.1369**	**9.2000e-004**	**0.1379**	**0.0363**	**8.5000e-004**	**0.0372**		**121.1696**	**121.1696**	**3.2300e-003**		**121.2503**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**7.0458**	**2.0445**	**9.0903**	**3.8730**	**1.8809**	**5.7539**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0664	0.0456	0.4593	1.2200e-003	0.1262	9.2000e-004	0.1271	0.0337	8.5000e-004	0.0345		121.1696	121.1696	3.2300e-003		121.2503
Total	**0.0664**	**0.0456**	**0.4593**	**1.2200e-003**	**0.1262**	**9.2000e-004**	**0.1271**	**0.0337**	**8.5000e-004**	**0.0345**		**121.1696**	**121.1696**	**3.2300e-003**		**121.2503**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0738	0.0507	0.5103	1.3500e-003	0.1521	1.0300e-003	0.1532	0.0404	9.5000e-004	0.0413		134.6329	134.6329	3.5900e-003		134.7226
Total	**0.0738**	**0.0507**	**0.5103**	**1.3500e-003**	**0.1521**	**1.0300e-003**	**0.1532**	**0.0404**	**9.5000e-004**	**0.0413**		**134.6329**	**134.6329**	**3.5900e-003**		**134.7226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.3826**	**1.9853**	**5.3679**	**1.4026**	**1.8265**	**3.2292**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0738	0.0507	0.5103	1.3500e-003	0.1402	1.0300e-003	0.1413	0.0374	9.5000e-004	0.0384		134.6329	134.6329	3.5900e-003		134.7226
Total	**0.0738**	**0.0507**	**0.5103**	**1.3500e-003**	**0.1402**	**1.0300e-003**	**0.1413**	**0.0374**	**9.5000e-004**	**0.0384**		**134.6329**	**134.6329**	**3.5900e-003**		**134.7226**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4504	107.6054	31.3517	0.2535	6.3422	0.3084	6.6506	1.8250	0.2950	2.1200		26,850.8678	26,850.8678	1.6312		26,891.6478
Worker	9.8656	6.7732	68.2049	0.1807	20.3335	0.1372	20.4707	5.3937	0.1265	5.5201		17,993.6804	17,993.6804	0.4795		18,005.6682
Total	**13.3160**	**114.3786**	**99.5566**	**0.4342**	**26.6757**	**0.4456**	**27.1213**	**7.2187**	**0.4214**	**7.6401**		**44,844.5481**	**44,844.5481**	**2.1107**		**44,897.3160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4504	107.6054	31.3517	0.2535	5.9346	0.3084	6.2430	1.7250	0.2950	2.0199		26,850.8678	26,850.8678	1.6312		26,891.6478
Worker	9.8656	6.7732	68.2049	0.1807	18.7432	0.1372	18.8804	5.0033	0.1265	5.1298		17,993.6804	17,993.6804	0.4795		18,005.6682
Total	**13.3160**	**114.3786**	**99.5566**	**0.4342**	**24.6778**	**0.4456**	**25.1234**	**6.7283**	**0.4214**	**7.1497**		**44,844.5481**	**44,844.5481**	**2.1107**		**44,897.3160**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2023	102.1229	28.9141	0.2511	6.3414	0.2710	6.6124	1.8247	0.2592	2.0839		26,612.2867	26,612.2867	1.5849		26,651.9091
Worker	9.2261	6.0892	62.5444	0.1742	20.3335	0.1337	20.4672	5.3937	0.1232	5.5168		17,349.4157	17,349.4157	0.4301		17,360.1674
Total	**12.4284**	**108.2121**	**91.4585**	**0.4253**	**26.6749**	**0.4047**	**27.0796**	**7.2184**	**0.3823**	**7.6007**		**43,961.7024**	**43,961.7024**	**2.0150**		**44,012.0765**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2023	102.1229	28.9141	0.2511	5.9338	0.2710	6.2048	1.7247	0.2592	1.9839		26,612.2867	26,612.2867	1.5849		26,651.9091
Worker	9.2261	6.0892	62.5444	0.1742	18.7432	0.1337	18.8769	5.0033	0.1232	5.1265		17,349.4157	17,349.4157	0.4301		17,360.1674
Total	**12.4284**	**108.2121**	**91.4585**	**0.4253**	**24.6770**	**0.4047**	**25.0817**	**6.7280**	**0.3823**	**7.1103**		**43,961.7024**	**43,961.7024**	**2.0150**		**44,012.0765**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	605.1971					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**605.4016**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	1.8466	1.2188	12.5182	0.0349	4.0697	0.0268	4.0965	1.0795	0.0247	1.1042		3,472.4794	3,472.4794	0.0861		3,474.6313
Total	**1.8466**	**1.2188**	**12.5182**	**0.0349**	**4.0697**	**0.0268**	**4.0965**	**1.0795**	**0.0247**	**1.1042**		**3,472.4794**	**3,472.4794**	**0.0861**		**3,474.6313**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	605.1971					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**605.4016**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	1.8466	1.2188	12.5182	0.0349	3.7514	0.0268	3.7782	1.0014	0.0247	1.0261		3,472.479 4	3,472.479 4	0.0861		3,474.631 3
Total	**1.8466**	**1.2188**	**12.5182**	**0.0349**	**3.7514**	**0.0268**	**3.7782**	**1.0014**	**0.0247**	**1.0261**		**3,472.479 4**	**3,472.479 4**	**0.0861**		**3,474.631 3**

3.7 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

3.7 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0518	0.0342	0.3510	9.8000e-004	0.1141	7.5000e-004	0.1149	0.0303	6.9000e-004	0.0310		97.3592	97.3592	2.4100e-003		97.4196
Total	**0.0518**	**0.0342**	**0.3510**	**9.8000e-004**	**0.1141**	**7.5000e-004**	**0.1149**	**0.0303**	**6.9000e-004**	**0.0310**		**97.3592**	**97.3592**	**2.4100e-003**		**97.4196**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.660 3	2,207.660 3	0.7140		2,225.510 4
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.660 3**	**2,207.660 3**	**0.7140**		**2,225.510 4**

3.7 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0518	0.0342	0.3510	9.8000e-004	0.1052	7.5000e-004	0.1059	0.0281	6.9000e-004	0.0288		97.3592	97.3592	2.4100e-003		97.4196
Total	**0.0518**	**0.0342**	**0.3510**	**9.8000e-004**	**0.1052**	**7.5000e-004**	**0.1059**	**0.0281**	**6.9000e-004**	**0.0288**		**97.3592**	**97.3592**	**2.4100e-003**		**97.4196**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement NEV Network

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	43.3097	109.9241	331.6318	0.7735	69.1146	0.8151	69.9298	18.4476	0.7675	19.2150		79,930.54 77	79,930.54 77	5.7692		80,074.77 78
Unmitigated	43.4159	110.7083	334.7155	0.7844	70.2197	0.8260	71.0457	18.7425	0.7777	19.5202		81,055.91 22	81,055.91 22	5.8215		81,201.45 08

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government (Civic Center)	7,475.02	0.00	0.00	10,064,687	9,885,118
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	6,565.88	6,565.88	6565.88	19,095,605	18,824,754
Total	14,040.90	6,565.88	6,565.88	29,160,292	28,709,872

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government (Civic Center)	10.00	5.00	6.50	75.00	20.00	5.00	50	34	16
Unenclosed Parking with	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	10.00	5.00	6.50	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government (Civic Center)	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unenclosed Parking with Elevator	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government (Civic Center)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government (Civic Center)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	84.6213	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Unmitigated	101.0026	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	10.7775					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	90.1639					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0611	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Total	**101.0026**	**6.0000e-003**	**0.6574**	**5.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.3500e-003**	**2.3500e-003**		**1.4069**	**1.4069**	**3.7100e-003**		**1.4997**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.0778					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	83.4824					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0611	6.0000e-003	0.6574	5.0000e-005		2.3500e-003	2.3500e-003		2.3500e-003	2.3500e-003		1.4069	1.4069	3.7100e-003		1.4997
Total	**84.6213**	**6.0000e-003**	**0.6574**	**5.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.3500e-003**	**2.3500e-003**		**1.4069**	**1.4069**	**3.7100e-003**		**1.4997**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Summary of VMT Analysis for the Airport Master Plan Update	
Metric	**VMT/ VMT per Passenger/ VMT per Employee**
Additional VMT per Passenger[8]	0.15
Additional Passengers	15,872
VMT for Additional Passengers	2,339
Average Bay Area Airport VMT per Passenger	105.00
VMT Reduction for Recaptured Passengers	-64.20
Total Passengers Recaptured	7,936
Total VMT Reduction for Recaptured Passengers	-509,500
VMT per Employee Increase Compared to SACOG Region	10
Total Additional Employees	2,020
Total Additional Employee Related VMT	20,220
Net Change in VMT due to Proposed Airport Master Plan Update	-486,941

[8] Difference between values documented Table 2.

Master Plan Emissions Calculations

	ROG	NO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	CH_4 (CO_2e)	N_2O	N_2O (CO_2e)	CO_2e
Emissions Rate (g/mi)	0.0157975	0.028041376	0.000778321	0.00072325	205.2429205	0.002543233		0.00449938		
Emission Reduction (g)	-7,692.45	-13,654.50	-379.00	-352.18	-99,941,192.94	-1,238.40		-2,190.93		
Emission Reduction (lbs/day)	-16.96	-30.10	-0.84	-0.78	-220,332.65	-2.73	-68.26	-4.83	-1,439.39	
Emission Reduction (tons/year)	-2.89	-5.13	-0.14	-0.13	-37566.72	-0.47	-11.64	-0.82	-245.42	
				MT	-3.41E+04	-4.22E-01	-10.56	-7.47E-01	-222.64	-34,313

Emissions Calculations by Air District - Net Change due to Master Plan Update

SMAQMD VMT:	1,988			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.0157975	0.028041376	0.000778321	0.00072325
Emissions (g)	31.41	55.75	1.55	1.44
Emissions (lbs/day)	0.07	0.12	0.00	0.00
Emissions (tons/year)	0.01	0.02	0.00	0.00

Yolo-Solano AQMD VMT:	-49,462			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.019607573	0.031002219	0.00080377	0.000747732
Emission Reduction (g)	-969.83	-1,533.43	-39.76	-36.98
Emission Reduction (lbs/day)	-2.14	-3.38	-0.09	-0.08
Emission Reduction (tons/year)	-0.36	-0.58	-0.01	-0.01

Feather River AQMD VMT:	7,927			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.013792261	0.032511664	0.000825003	0.000768733
Emissions (g)	109.33	257.72	6.54	6.09
Emissions (lbs/day)	0.24	0.57	0.01	0.01
Emissions (tons/year)	0.04	0.10	0.00	0.00

Placer County APCD VMT:	3,710			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.017410112	0.031775702	0.000820729	0.000764873
Emissions (g)	64.59	117.89	3.04	2.84
Emissions (lbs/day)	0.14	0.26	0.01	0.01
Emissions (tons/year)	0.02	0.04	0.00	0.00

El Dorado County AQMD VMT:	544			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.016047036	0.036896057	0.00091057	0.000848227
Emissions (g)	8.73	20.07	0.50	0.46
Emissions (lbs/day)	0.02	0.04	0.00	0.00
Emissions (tons/year)	0.00	0.01	0.00	0.00

Strategic Area Project Health Effects Tool

Strategic Area Location	III. Downtown Sacramento	**<-- Step 1: Input the area**
NOx Emissions	93.27	**<-- Step 2: Input NOx emissions in lbs./day**
ROG Emissions	86.42	**<-- Step 3: Input ROG emissions in lbs./day**
PM25 Emissions	31.56	**<-- Step 4: Input PM2.5 emissions in lbs./day**

PM2.5 Health Endpoint	Age Range1	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5]	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2]	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
		(Mean)	**(Mean)**		
Respiratory					
Emergency Room Visits, Asthma	0 - 99	2.2	2.0	0.011%	18419
Hospital Admissions, Asthma	0 - 64	0.14	0.13	0.0070%	1846
Hospital Admissions, All Respiratory	65 - 99	0.77	0.69	0.0035%	19644
Cardiovascular					
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.39	0.36	0.0015%	24037
Acute Myocardial Infarction, Nonfatal	18 - 24	0.00020	0.00018	0.0048%	4
Acute Myocardial Infarction, Nonfatal	25 - 44	0.017	0.016	0.0051%	308
Acute Myocardial Infarction, Nonfatal	45 - 54	0.038	0.035	0.0048%	741
Acute Myocardial Infarction, Nonfatal	55 - 64	0.064	0.060	0.0049%	1239
Acute Myocardial Infarction, Nonfatal	65 - 99	0.25	0.23	0.0046%	5052
Mortality					
Mortality, All Cause	30 - 99	5.5	5.1	0.011%	44766

Ozone Health Endpoint	Age Range1	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5]	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2]	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
		(Mean)	**(Mean)**		
Respiratory					
Hospital Admissions, All Respiratory	65 - 99	0.15	0.11	0.00058%	19644
Emergency Room Visits, Asthma	0 - 17	0.74	0.61	0.010%	5859
Emergency Room Visits, Asthma	18 - 99	1.2	1.0	0.0079%	12560
Mortality					
Mortality, Non-Accidental	0 - 99	0.092	0.075	0.00025%	30386

1. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.
2. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects are shown for the Reduced Sacramento 4-km Modeling Domain and the 5-Air-District Region.
3. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, the background incidence rates cover the 5-Air-District Region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

4. The total number of health incidences across the 5-Air-District Region is calculated based on the modeling data. The information is presented to assist in providing overall health context.

5. The technical specifications and map for the Reduced Sacramento 4-km Modeling Domain are included in Appendix A, Table A-1 and Appendix B, Figure B-2 of the *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District.*

Sac Metro Air District Strategic Area Project Health Effects Tool, version 2, published September 2020

Strategic Area Project Health Effects Tool

Strategic Area Location	III. Downtown Sacramento	**<-- Step 1: Input the area**
NOx Emissions	109.93	**<-- Step 2: Input NOx emissions in lbs./day**
ROG Emissions	127.93	**<-- Step 3: Input ROG emissions in lbs./day**
PM25 Emissions	19.22	**<-- Step 4: Input PM2.5 emissions in lbs./day**

PM2.5 Health Endpoint	**Age Range1**	**Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5]**	**Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2]**	**Percent of Background Health Incidences Across the 5-Air-District Region[3]**	**Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]**
		(Mean)	**(Mean)**		
Respiratory					
Emergency Room Visits, Asthma	0 - 99	2.2	2.0	0.011%	18419
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Ozone Health Endpoint	**Age Range1**	**Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5]**	**Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2]**	**Percent of Background Health Incidences Across the 5-Air-District Region[3]**	**Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]**
		(Mean)	**(Mean)**		
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Hospital Admissions, All Respiratory	65 - 99	0.15	0.11	0.00058%	19644
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5. The technical specifications and map for the Reduced Sacramento 4-km Modeling Domain are included in Appendix A, Table A-1 and Appendix B, Figure B-2 of the *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District.*

Sac Metro Air District Strategic Area Project Health Effects Tool, version 2, published September 2020

BR-1

Biological Assessment

Biological Resources Assessment for the Sacramento International Airport Cargo Facility Project

Prepared for:

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JULY 2020

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Table of Contents

APPENDICES

FIGURES

TABLES

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
BRA	Biological Resources Assessment
BSA	Biological Study Area
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
eDNA	environmental DNA
ESA	Endangered Species Act
GIS	geographic information system
OHWM	ordinary high water mark
Project	Sacramento International Airport Cargo Facility Project
USACE	United States Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1 Introduction and Project Location

1.1 Introduction

Dudek has prepared this Biological Resources Assessment (BRA) for the Sacramento International Airport Cargo Facility Project (Project). This BRA presents the methods used to assess biological resources, including analysis of the initial desktop research and reconnaissance-level biological field surveys; results of the special-status biological resource surveys, and assessment of potential to occur for biological resources; and conclusions that identify findings and conservation measures. The goal of this BRA is to provide an overview of biological resources that could potentially be affected by the Project. and to provide support for California Environmental Quality Act and state and federal permit approvals, if needed. A Biological Assessment is also under preparation and will provide additional detail regarding impacts to federally listed species in support of permitting with the US Fish and Wildlife Service.

1.2 Project Location and Setting

The Project location is northwest of the City of Sacramento in an unincorporated area of northwestern Sacramento County (Figure 1, Project Location). It can be found on the Taylor Monument U.S. Geological Survey (USGS) 7.5-minute quadrangle, in Sections 12, 13, 24, and 25 of Township 10N, Range 3E and Sections 5, 6, 7, 16, 17, 18, 19, 20, 29, 30, 31, and 32 of Township 10N, Range 4E, Mount Diablo Base Meridian. The Biological Study Area (BSA) for the BRA includes the project site, access roads, and other potential locations for infrastructure or road improvements that may ultimately be part of the Project. The BSA consists primarily of undeveloped lands owned and managed by the Sacramento County Department of Airports, developed areas including airport infrastructure, roadsides, and various access roads including freeways, two-lane paved roads, and dirt roads. The BSA is bordered by Interstate 5 to the south and the Sacramento River to the west, and is generally surrounded by undeveloped or agricultural land (Figure 2, Biological Study Area).

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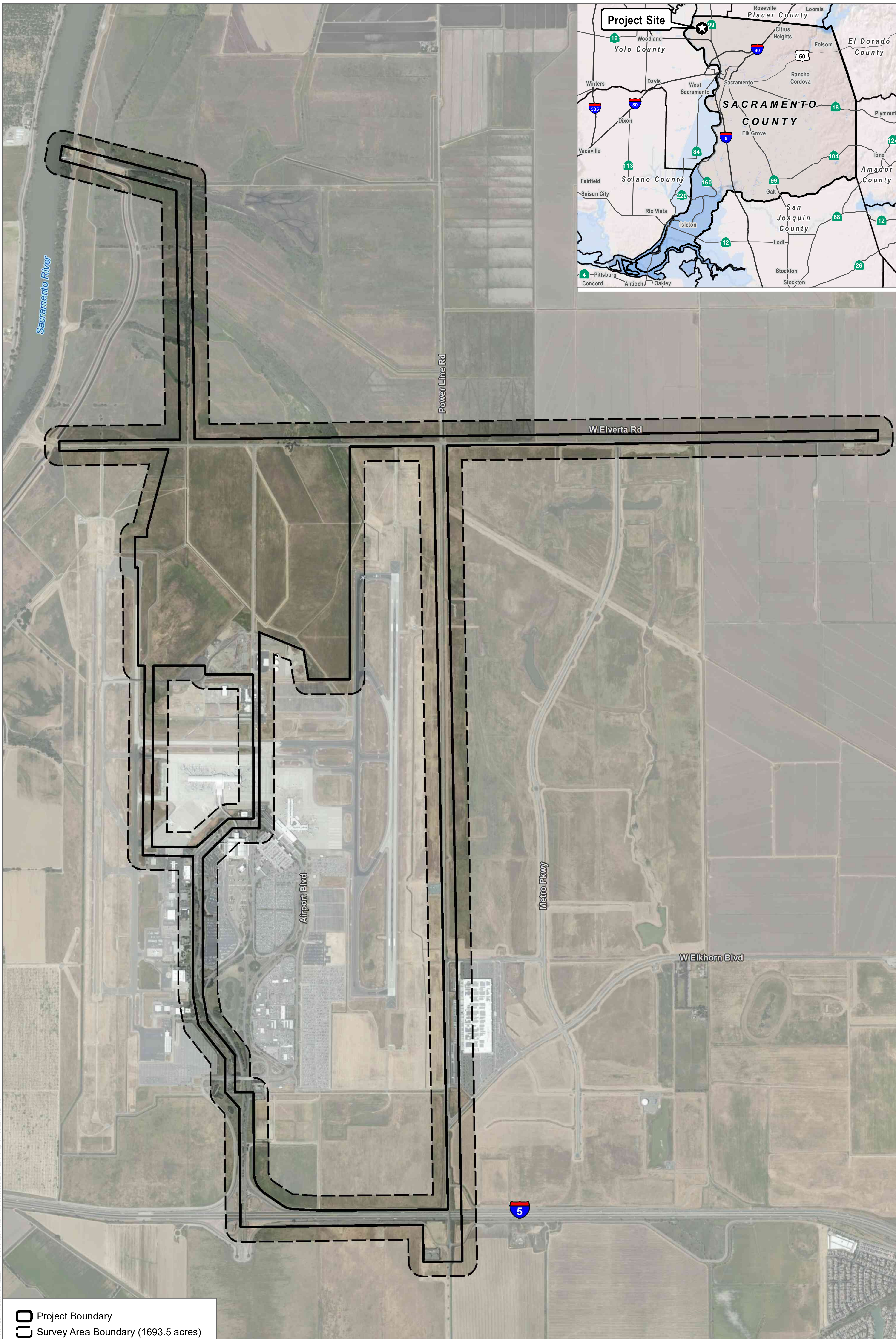

SOURCE: Bing 2020, SCAS 2020

DUDEK

0 900 1,800 Feet

FIGURE 1

Project Location

Sacramento International Airport Cargo Facility Project

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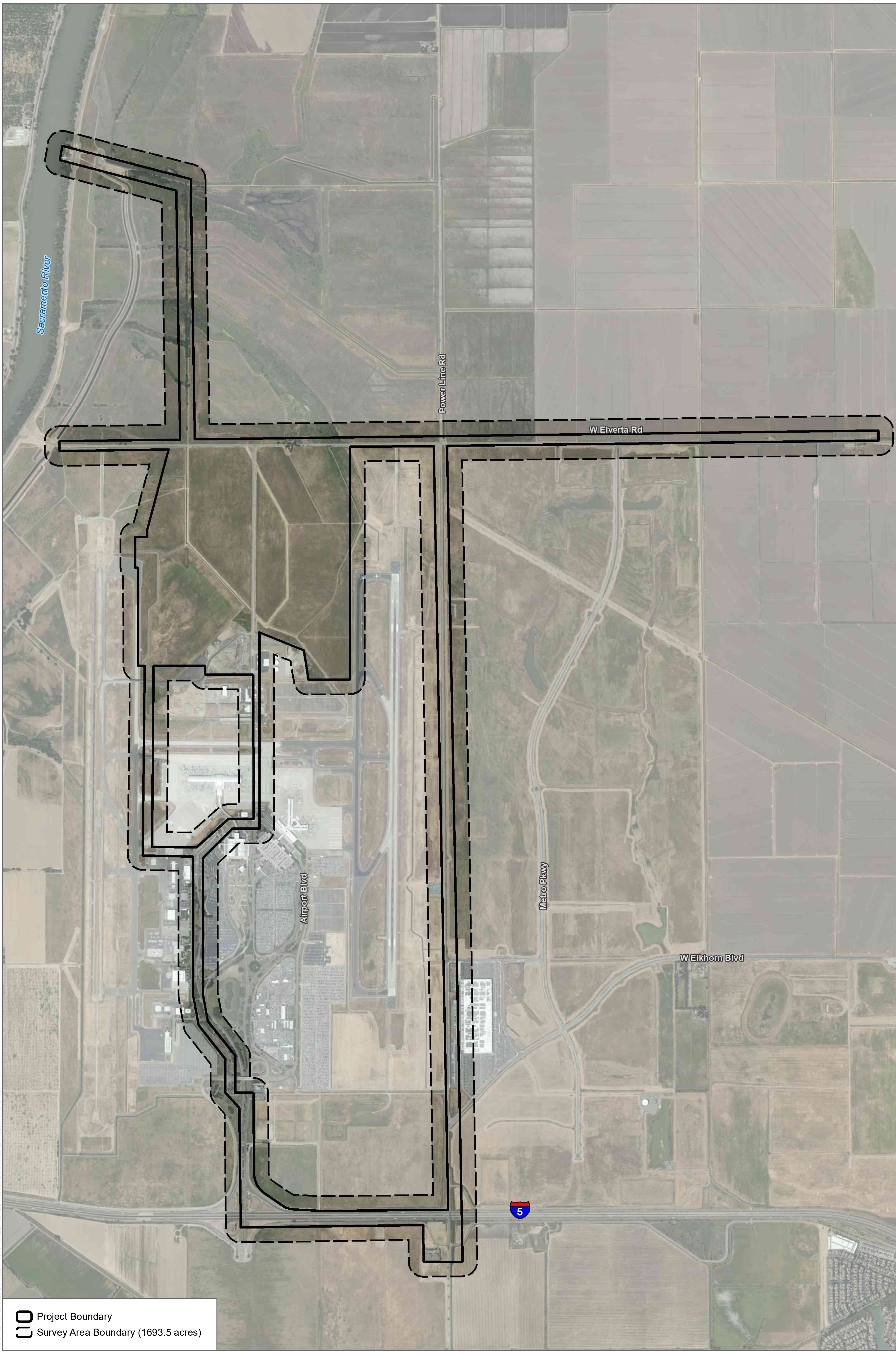

SOURCE: Bing 2020, SCAS 2020

DUDEK

0 900 1,800 Feet

FIGURE 2

Biological Study Area

Sacramento International Airport Cargo Facility Project

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2 Methods

Data regarding biological resources present within the approximately 1,693-acre BSA were obtained through a review of pertinent literature, field reconnaissance, habitat assessments, and targeted surveys, which are described in detail below. An aquatic resources jurisdictional delineation was also conducted, and is reported separately in the Aquatic Resources Delineation Report, For purposes of this report, special-status resources are defined as follows:

- Special-status plant species include (1) species designated as either rare, threatened, or endangered by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS) and that are protected under either the California Endangered Species Act (ESA) (California Fish and Game Code Section 2050 et seq.) or the federal ESA (16 USC 1531 et seq.); (2) species that are candidate species being considered or proposed for listing under the federal or California ESA; or (3) species that are included on the CDFW Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2020a) or species with a California Rare Plant Rank (CRPR) of 1 or 2 in the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS Inventory) (CNPS 2020a).
- Special-status wildlife species include (1) species designated as either rare, threatened, or endangered by the CDFW or USFWS and that are protected under either the California ESA (California Fish and Game Code Section 2050 et seq.) or the federal ESA (16 USC 1531 et seq.); (2) species that are candidate species being considered or proposed for listing under the federal or California ESA; or (3) species that are included on the CDFW Special Animals List (CDFW 2019a).
- Special-status vegetation communities are those designated as sensitive by the CDFW or those that provide habitat for special-status species.

2.1 Literature and Database Review

Prior to field surveys, special-status biological resources present or potentially present within the BSA were identified through queries of the following:

- California Natural Diversity Database (CNDDB) query for special-status species occurrences in the nine USGS 7.5-minute quadrangles containing and immediately surrounding the BSA (Taylor Monument, Grays Bend, Knights Landing, Verona, Pleasant Grove, Rio Linda, Davis, Sacramento East, and Sacramento West) (CDFW 2020a)
- CNPS Inventory query for special-status species occurrences in the nine USGS 7.5-minute quadrangles containing and immediately surrounding the BSA (CNPS 2020a)
- National Oceanic and Atmospheric Administration Essential Fish Habitat West Coast Data Inventory via ArcGIS (NOAA 2018)
- National Resources Conservation Service Web Soil Survey (USDA and NRCS 2020)
- USFWS Information for Planning and Consultation Trust Resource Report for the BSA (USFWS 2020a)
- USFWS National Wetlands Inventory Mapper of Historical Wetland Data (USFWS 2020b)

Additionally, Dudek reviewed secondary resources such as the Calflora database for vegetation resources occurring in Sacramento County and current and historical GoogleEarth aerial photography to identify any potentially jurisdictional aquatic resources based on aerial signatures (Calflora 2020; Google 2020).

2.2 Field Surveys

On February 17th and 18th, 2020, Dudek Biologists Allie Sennett and Laura Burris performed a reconnaissance-level biological field survey of the BSA. The field survey was conducted within the BSA and recommended buffer areas, with additional visual assessments of the adjacent areas. The field survey was conducted on foot, walking meandering transects, and focused on assessing and identifying the presence of rare plants, the presence or potential presence of special-status wildlife species and/or their habitat, special status vegetation communities, and aquatic resources. Field notes, an aerial photograph with an overlay of the property boundary, Collector for ArcGIS on an iPad/mobile device, and a Trimble Geo 7X GPS unit with sub-meter accuracy were used to map biological resources while in the field.

Additional field surveys included focused surveys for Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) and tricolored blackbird (*Agelaius tricolor*). A habitat assessment was also conducted for giant gartersnake (Thamnophis gigas), and environmental DNA samples of potential giant gartersnake habitat were collected for later processing[1]. Vegetation and aquatic features were mapped in detail for the Aquatic Resources Delineation Report (under separate cover). The methods for these focused surveys are described below; Table 1 lists the dates, focus, scope, and personnel for each survey, and Appendix A provides photographs that were taken throughout the BSA during the survey efforts.

Table 1. Summary of Surveys

Date	Time	Type of Survey	Scope of Survey	Biologists
2/17/2020	08:30–16:30	Recon, SWHA, BUOW, ARDR, veg mapping.	BSA plus standard SWHA (0.5 mi) and BUOW, tricolored blackbird (500 ft) buffers.	Laura Burris Allie Sennett
2/18/2020	08:30–16:30	Recon, SWHA, BUOW, ARDR, veg mapping	BSA plus standard SWHA (0.5 mi) and BUOW, tricolored blackbird (500 ft) buffers.	Laura Burris Allie Sennett
2/19/2020	08:30–16:00	Recon, SWHA, BUOW, ARDR, veg mapping.	BSA plus standard SWHA (0.5 mi) and BUOW, tricolored blackbird (500 ft) buffers.	Laura Burris
2/20/2020	08:30–16:00	Recon, SWHA, BUOW, ARDR, veg mapping.	BSA plus standard SWHA (0.5 mi) and BUOW, tricolored blackbird (500 ft) buffers.	Laura Burris Allie Sennett
2/21/2020	08:00–16:00	Recon, SWHA, BUOW, ARDR, veg mapping.	BSA plus standard SWHA (0.5 mi) and BUOW, tricolored blackbird (500 ft) buffers.	Laura Burris Allie Sennett
4/1/2020	08:00–12:00	SWHA	BSA plus SWHA survey buffer	Paul Keating
4/2/2020	16:30–19:30	SWHA	BSA plus SWHA survey buffer	Paul Keating
4/3/2020	07:30–10:00	SWHA	BSA plus SWHA survey buffer	Paul Keating
4/12/2020	16:30–19:30	SWHA	BSA plus SWHA survey buffer	Paul Keating
4/18/2020	07:30–10:00	SWHA	BSA plus SWHA survey buffer	Paul Keating

1 Environmental DNA samples collected will be processed and analyzed for inclusion in the Biological Assessment, available later in 2020.

Table 1. Summary of Surveys

Date	Time	Type of Survey	Scope of Survey	Biologists
4/19/2020	07:30–10:00	SWHA	BSA plus SWHA survey buffer	Paul Keating
6/12/20	09:00–11:00	BUOW burrow monitoring follow-up	BSA at previously identified BUOW burrows	Mike Henry
7/6/2020	16:00–18:30	SWHA	BSA plus SWHA survey buffer	Paul Keating
7/12/2020	06:00–11:00	SWHA	BSA plus SWHA survey buffer	Paul Keating
7/14/20	07:30–12:30	SWHA nest survey follow-up, BUOW burrow monitoring follow-up	BSA plus SWHA survey buffer	Andy Hatch

Note: Recon = reconnaissance; SWHA = Swainson's hawk; BUOW = burrowing owl; ARDR = Aquatic Resources Delineation Report; veg mapping = vegetation mapping; BSA = Biological Survey Area; mi = mile; ft = foot.

2.2.1 Vegetation Communities and Land Covers

Dudek used CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW 2018) and the California Natural Communities List (CDFW 2019b) to map the entire BSA. Vegetation communities and land covers were delineated to the vegetation alliance level and, where appropriate, the association level.

Vegetation communities and land uses within the BSA were mapped in the field directly onto a 1:2,400-scale (1 inch = 200 feet), aerial-photograph-based field map. A minimum mapping unit of 2.2 acres was established to standardize the mapping protocol among biologists. A Dudek geographic information system (GIS) analyst processed the vegetation boundaries as delineated by the field biologists and created a GIS coverage for vegetation communities using ArcGIS software. Once major linework and community designations were completed, a geodatabase was created to help ensure the data was topologically correct and met final quality assurance/quality control procedures.

2.2.2 Plants

All plant species encountered during the field surveys were identified and recorded. Species that could not be identified immediately were collected and brought into the laboratory for further investigation. Latin and common names for plant species with a CRPR (formerly "CNPS List") follow the CNPS Inventory (CNPS 2020a). For plant species without a CRPR, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson eFlora 2020) and common names follow the California Natural Communities List (CDFW 2019b) or the U.S. Department of Agriculture Natural Resources Conservation Service PLANTS Database (USDA 2020).

2.2.3 Wildlife

Wildlife species detected during field surveys by sight, calls, tracks, scat, or other signs were recorded. Binoculars (10 × 42 power) were used to aid in the identification of observed wildlife throughout the BSA. In addition to species actually detected, expected wildlife use of the BSA was determined by known habitat preferences of local species and knowledge of their relative distributions in the area.

Sources for common and scientific names used for wildlife included Crother (2012) for reptiles and amphibians, American Ornithologists' Union (AOU 2012) for birds, Wilson and Reeder (2005) for mammals, the North American Butterfly Association (NABA 2001) for butterflies, and Moyle (2002) for fish.

2.2.3.1 Swainson's Hawk

Dudek conducted focused surveys for Swainson's hawk following the methodology used in the Central Valley recommended by the Swainson's Hawk Technical Advisory Committee (SHTAC 2000). The protocol stipulates that Swainson's hawk nesting surveys be conducted within suitable nest habitat within 0.5 miles of the study area to determine the presence/absence of active nests and to ensure that project development and/or operation does not result in "take" of Swainson's hawks through disruption of nesting activities. This approach allows for an assessment of the potential requirements for foraging habitat mitigation, as outlined in the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (CDFW 1994). Pursuant to this protocol, Dudek surveyed all suitable nesting habitat within the BSA and within 0.5 miles of the BSA, to the extent that those areas were accessible and visible. Although Dudek biologists did not have access to private properties outside the BSA, these areas were surveyed with the aid of binoculars and spotting scopes from the BSA or public roads within 0.5 miles of the BSA. During each survey, using binoculars and spotting scopes, Dudek biologists inspected individual trees, tree clusters, and riparian areas for suitable nest structures; searches were also conducted for individual Swainson's hawks. Information was recorded regarding Swainson's hawk observed activities, including behaviors indicative of pairing and nesting. The location of any occupied or suitable nest during the surveys was recorded, as were the locations of Swainson's hawks and any Swainson's hawk breeding behavior. During subsequent surveys, the biologists inspected previously identified nests and potential nest sites, and continued to search for previously unidentified nests.

Dudek conducted nine surveys, including three between March 20 and April 5, 2020, three between April 5 and April 20, 2020, and three between June 10 and July 30, 2020. Pursuant to the Swainson's Hawk Technical Advisory Committee protocol, surveys during the initial period focused on suitable nest structures and the presence of Swainson's hawks in suitable nesting habitat. Surveys during the April 5 to April 20 period, when Swainson's hawks are generally paired, actively nest building, and frequently visiting the nest site, focused on nest building, breeding behavior, and locating nest structures. Surveys during the June 10 to July 30 period, when young are generally present and visible and adults are making frequent trips to the nests to feed their young, focused on searching for previously undetected nests by searching for nestlings, fledglings, and adults displaying behaviors indicative of individuals that are actively nesting (agitation, calling frequently while flying overhead). Biologists also visited previously identified nest sites to update nest status during follow-up surveys.

2.2.3.2 Burrowing Owl

Focused breeding-season burrowing owl surveys were conducted in accordance with Appendices C and D of the CDFW Staff Report on Burrowing Owl Mitigation (CDFW 2012). Surveys focused on California annual grasslands, managed agricultural fields, roadside areas, and the margins of agricultural fields. Follow-up surveys as outlined in Appendix D of the CDFW report were conducted in areas that were determined during the first pass to support suitably sized burrows. The initial survey was conducted between February 17 and 21, 2020. Two additional surveys were conducted June 12, 2020, and July 14, 2020. Burrows were investigated for burrowing owl sign, including regurgitated castings (pellets) of prey remains, scat (whitewash), and feathers. The locations of any burrowing owls were recorded. Surveys were mostly conducted in hours when burrowing owls are active, from approximately 6:00 a.m. until approximately 10:00 a.m.

2.2.3.3 Tricolored Blackbird

Based on a review of tricolored blackbird survey data, no active colonies have been documented within 1 mile of the BSA in the last 20 years. Therefore, formal surveys for this species were not warranted, and a focused assessment for potential breeding habitat in the BSA was conducted. The methods used in this study follow the general direction of the March 19, 2015, CDFW staff guidance regarding avoidance of impacts to tricolored blackbird breeding colonies on agricultural fields. The guidance suggests a buffer distance of 300 feet from active breeding colonies. Therefore, the habitat assessment included searching the BSA and areas within 300 feet of the BSA for suitable breeding habitat (e.g., wetlands, cattails (*Typha* spp.), bulrushes [*Schoenoplectus* spp.], triticale fields, and Himalayan blackberry [*Rubus armeniacus*] near irrigated fields or stock ponds). Where access was limited, habitat assessments were conducted by binocular and remote sensing methods.

2.2.3.4 Giant Gartersnake

The giant gartersnake (*Thamnophis gigas*) is a secretive and evasive species that likely occurs at low density in many locations. Any efforts to document the presence of the species in specific locations must, therefore, include survey and analytical methods (e.g., Halstead et al. 2009, 2011; Hansen et al. 2017) that account for low expected detection probabilities. For the BRA, the methods and results of a habitat assessment conducted by biologist Eric Hansen are summarized, and the complete study prepared by Eric Hansen is included in Appendix B. The results of environmental DNA sampling and analysis will be included in the Biological Assessment for the project, available later in 2020 after the environmental DNA laboratory analysis is complete.

Though no formal habitat assessment protocol exists for evaluating giant gartersnake habitat, the methodology used for the habitat assessment is comparable with those developed for other species that depend upon aquatic habitat (e.g., California tiger salamander [*Ambystoma californiense*] and California red-legged frog [*Rana draytonii*]). The habitat suitability was characterized based on giant gartersnake life history parameters; the condition and contiguity of regional landscape features, including aquatic corridors providing linkages to suitable habitats; and proximity and connectedness to historical and recent giant gartersnake observations.

Habitat characteristics used in this evaluation are based on recognized minimum ecological requirements for giant gartersnakes. Each criterion is scored, with a final numerical total represented categorically using GIS. Where possible, all results are based on a visual assessment of habitat; where visual confirmation was not possible, values are based on interpretation of aerial imagery. Aquatic habitat values assigned to agricultural ditches, canals, and drains in the BSA are based on aerial imagery and direct observation. This evaluation provides a series of GIS-generated maps illustrating habitat value by colored code, supporting a detailed classification, by trait, of habitat variables within the BSA. Scoring methodologies used for this assessment are modified from Appendix D (page 157) of the USFWS 1999 Draft Recovery Plan for the Giant Garter Snake (USFWS 1999a). The evaluation form has been updated for greater rigor in assessing habitat value, incorporates a stepwise scale to reduce scoring ambiguity, and is modified for use in GIS analyses.

2.2.3.5 Valley Elderberry Longhorn Beetle

Per the protocol outlined in the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) (USFWS 2017a), Dudek biologists conducted an inventory of elderberry shrubs (*Sambucus spp.*) within the BSA. Elderberry shrubs were recorded using a handheld GPS device. All stems over 1 inch in diameter at the base and any apparent exit holes were noted on standardized datasheets for each elderberry shrub.

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3 Results

3.1 Setting of the Biological Study Area

The BSA is in the Sacramento Valley bioregion, in the northern portion of the great Central Valley. This region is characterized by a Mediterranean climate, which includes dry hot summers and cool wet winters. The Sacramento Valley has two major river systems, the Sacramento and American Rivers, which carry water that originates in the Sierra Nevada south and west into the Sacramento-San Joaquin River Delta (SWRCB 2018). The project area is adjacent to the Sacramento River. Elevation in the BSA averages approximately 20 feet above mean sea level and the topography of the BSA is flat, with a slight grade to the west and north through Jacobs Slough towards the Sacramento River.

Potential wetlands and other waters identified in the BSA include freshwater forested/shrub wetland, freshwater pond, freshwater emergent wetlands, the Sacramento River, irrigation ditches, roadside ditches, and canals. These features, their acreage and classification and complete details including mapping are included in the Aquatic Resources Delineation Report.

3.1.1 Soils and Aquatic Resources including Waters and Wetlands

The BSA contains 15 soil mapping units from eight soil series, and two other mapping map units including urban land and water (Table 2). All but one soil series (San Joaquin) are considered hydric, meaning the soils tend to pond water consistently enough to support the growth of wetland vegetation. Hydric soils are often associated with wetlands or other waters. The primary drainage of the BSA and vicinity is the Sacramento River, which flows immediately west of the BSA. An Aquatic Resources Delineation Report has been prepared concurrently for the Project, and can be referenced to review all specifications, regulatory information, and findings pertaining to aquatic resources in the BSA.

Table 2. Summary of Soil Units in the BSA

Soil Map Unit Name	Hydric	Drainage Class	Landform
Capay clam loam, 0% to 2% slopes, occasionally flooded	No	Moderately well drained	Basin floors
Clear Lake clay, hardpan substratum, drained, 0% to 1% slopes	Yes	Somewhat poorly drained	Basin floors
Columbia sandy loam, drained, 0% to 2% slopes	Yes	Somewhat poorly drained	Floodplains
Columbia sandy loam, clayey substratum, partially drained, 0% to 2% slopes	Yes	Somewhat poorly drained	Floodplains, natural levees
Columbia sandy loam, clayed substratum, drained, 0% to 2% slopes	Yes	Somewhat poorly drained	Floodplains
Cosumnes silt loam, partially drained, 0% to 2% slopes	Yes	Somewhat poorly drained	Floodplains

Table 2. Summary of Soil Units in the BSA

Soil Map Unit Name	Hydric	Drainage Class	Landform
Cosumnes silt loam, drained, 0% to 2% slopes	Yes	Somewhat poorly drained	Floodplains
Galt clay, leveled, 0% to 1% slopes	Yes	Moderately well drained	Terraces
Sailboat silt loam, partially drained, 0% to 2% slopes, MRLA 16	Yes	Somewhat poorly drained	Floodplains on natural levees
Sailboat silt loam, drained, 0% to 2% slopes, MRLA 17	Yes	Somewhat poorly drained	Floodplains on natural levees
San Joaquin silt loam, leveled, 0% to 1% slopes	No	Moderately well drained	Terraces
San Joaquin-Durixeralfs complex, 0% to 1% slopes	No	Moderately well drained	Terraces
San Joaquin-Galt complex, leveled, 0% to 1% slopes	No	Moderately well drained	Terraces
San Joaquin-Xerarents complex, leveled, 0% to 1% slopes	No	Moderately well drained	Terraces
Urban land	No		
Valpac loam, partially drained, 0% to 2% slopes, MRLA 16	Yes	Somewhat poorly drained	Natural levees on floodplains
Water			

Source: USDA and NRCS 2020.

3.1.2 Vegetation Communities and Land Cover Types

The BSA consists of a combination of natural and anthropogenic land cover types. The cover types—including natural vegetation communities and aquatic sites, areas altered by human activities, and the built environment—have been adapted from the California Natural Communities List (CDFW 2019b) or the California Wildlife Habitat Relationships System (CDFW 2020b). Terrestrial cover types documented on the BSA are displayed in Figure 3, Table 3, and discussed further in the following text.

Table 3. Terrestrial Vegetation Communities and Land Cover Types

Vegetation Community/Land Cover Type	Biological Survey Area (acres)
Herbaceous	
Annual Grassland	1188.8
Typha (*angustifolia, domingensis, latifolia*) Herbaceous Alliance (Cattail Marsh)	1.0
Schoenoplectus (*acutus, californicus*) Herbaceous Alliance (Hardstem and California Bulrush Marsh)	1.1
Schoenoplectus acutus – *Typha latifolia* (Fresh Emergent Marsh)	1.6
Shrubland	
Rubus armeniacus Shrubland Semi-Natural Alliance (Himalayan Blackberry Brambles)	8.6
Salix exigua Shrubland Alliance (Sandbar Willow Thickets)	1.9
Woodland	
Quercus lobata Forest and Woodland Alliance (Valley Oak Woodland)	9.6

Table 3. Terrestrial Vegetation Communities and Land Cover Types

Vegetation Community/Land Cover Type	Biological Survey Area (acres)
Salix gooddingii Forest Alliance (Goodding's Willow Forest)	2.6
Salix gooddingii – Salix laevigata Forest and Woodland Alliance (Mixed Riparian Forest)	2.2
Salix laevigata Forest Alliance (Red Willow Forest)	0.1
Other	
Agriculture	27.2
Ruderal	8.4
Landscaped	56.6
Developed	369.3
Total	**1,679**

Sources: CDFW 2019b; CNPS 2020b.

3.1.2.1 Natural Vegetation Communities

Annual Grassland. Annual grassland is the dominant vegetation community present on the BSA. This community lacks a shrub and tree layer and consists primarily of non-native, annual grasses, and forbs, with some native forbs interspersed. Herbaceous dominants in this vegetation community on site include wild oat (*Avena* sp.), soft brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), and cutleaf geranium (*Geranium dissectum*).

Cattail Marsh. Cattail marsh is dominated by *Typha* species with more than 50% relative cover in the herbaceous layer (CNPS 2020b). Other species common in this vegetation community include water tolerant grasses such as barnyard grass (*Echinochloa crus-galli*), pale spikerush (*Eleocharis macrostachya*), and horsetail (*Equisetum telmateia*).

Bulrush Marsh. Bulrush marsh is dominated by hardstem bulrush (*Schoenoplectus acutus*) (also known as tule), with 10% or more absolute cover in the herbaceous layer. Cattails and other herbs may also be present. Herbs are less than 13 feet tall and cover is intermittent to continuous. This vegetation type is widespread in freshwater to slightly brackish marshes, and is found in low, wet areas throughout the Sacramento Valley (CNPS 2020b). In the BSA, bulrush marsh is dominated by a monoculture of hardstem bulrush and is typically associated with natural wetlands or earthen drainage ditches.

Himalayan Blackberry Brambles. Himalayan blackberry brambles are dominated by non-native Himalayan blackberry and located in areas with greater than 60% relative cover in the shrub layer. Emergent trees of Fremont cottonwood (*Populus fremontii*) and willows (*Salix* spp.) may be present. Brambles are less than 10 feet tall and the canopy is intermittent to continuous (CNPS 2020b). In the Central Valley, this vegetation type is common along levees, disturbed riparian strips, and riprapped portions of river channels. In the project study area, this vegetation community creates a monoculture of Himalayan blackberry in patches and along a variety of drainages.

Sandbar Willow Thickets. Sandbar willow thickets are characterized by a dominance (20% absolute cover) of sandbar willow (*Salix exigua*) in the shrub canopy, or a co-dominance if sandbar willow is greater than 50% relative cover in the shrub canopy (CNPS 2020b). In the BSA, this vegetation community is interspersed with the valley oak (*Quercus lobata*) woodland, Goodding's willow (*Salix gooddingii*) forest, and mixed riparian forest primarily north of Elverta Road. It is common in areas of natural or artificial wetland and along canals, earthen ditches, and natural drainages.

Valley Oak Woodland. Valley oak woodland is dominated by valley oak with box elder (*Acer negundo*), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), black walnut (*Juglans hindsii*), interior live oak (*Quercus wislizeni*), Fremont cottonwood, Goodding's willow, and smaller willow species as co-dominants (CNPS 2020b). Shrubs and vines are common to occasional and include California grape (*Vitis californica*), Himalayan blackberry, and blue elderberry (*Sambucus nigra*). In this vegetation community, valley oak may have greater than 50% relative cover in the tree canopy; greater than 30% relative cover when other tree species, such as interior live oak or arroyo willow (*Salix lasiolepis*), are present; or greater than 35% cover in the tree canopy with box elder, white alder, Oregon ash, Fremont cottonwood, or Western sycamore (*Platanus racemosa*) present (CNPS 2020b). In the project study area, valley oak woodland occurs along the Sacramento River and most of the drainages north of Elverta Road and west of Power Line Road.

Goodding's Willow Forest. Goodding's willow forest is dominated or co-dominated by Goodding's willow, with other species interspersed in the canopy including white alder, box elder, and valley oak. Shrubs present in this vegetation community can include mulefat (*Baccharis salicifolia*), rose (*Rosa californica*), and sandbar willow (CNPS 2020b). In this vegetation community, Goodding's willow may have greater than 50% relative cover in the tree canopy or 30% relative cover if other willows are co-dominant. Goodding's willow forest is most prevalent in the project study area in the northwestern portion, adjacent to canals and waterways and natural wetland areas.

Red Willow Forest. Red willow forest is dominated by at least 50% relative cover of red willow (*Salix laevigata*) in the tree canopy (CNPS 2020b). Other trees such as Goodding's willow, box elder, Fremont cottonwood, and valley oak may be present in the tree canopy and the shrub layer is generally sparse and may include mulefat, rose, Himalayan blackberry, and blue elderberry. Red willow forest occurs in patches with Gooding's willow forest, mixed riparian forest, sandbar willow thickets, and valley oak woodland in the northern extent of the BSA.

Mixed Riparian Forest. Mixed riparian forest is a conglomerate of sandbar willow thickets, red willow forest, Gooding's willow forest, and valley oak woodland. Willows and valley oak are intermixed and co-dominant in the tree canopy along with Fremont cottonwood. The shrub layer in this vegetation community consists of Himalayan blackberry, coyote brush (*Baccharis pilularis*), and blue elderberry. Herbaceous layers range from cattail to annual grassland, depending on the soil moisture. In the BSA, mixed riparian forest is restricted to more natural areas north of Elverta Road.

3.1.2.2 Non-Natural Vegetation and Land Cover

Agriculture. Agricultural land cover is comprised of areas actively cultivated for food crops. These areas are typically subject to annual soil disturbance through disking, tilling, and harvesting, and may also receive supplemental irrigation. In the BSA, agriculture is limited to rice fields and dryland farming. Rice fields are characterized by annual flooding for rice cultivation. Rice fields are separated by raised berms and are generally tilled annually. Dryland farming typically includes grain or livestock feed crops such as barley, oats, or other grains. Dryland crop areas are typically tilled and harvested annually, with some areas remaining fallow for a year or more. In the BSA, agricultural fields dominate the areas adjacent to Elverta Road northeast of the Sacramento International Airport.

Ruderal. Ruderal areas are those that have significant anthropogenic influences and have a cover of plant species that are typically non-native. Within the BSA, ruderal areas include the sparsely vegetated upland areas that have been graded as a result of past roadway improvements, roadside pull-outs, gravel lots, and previously graded areas that have remained undeveloped for enough time to promote plant establishment. The soils are generally hard-packed and contain high concentrations of gravel. Vegetation cover is sparse in ruderal areas and dominated by introduced, non-native plant species such as redstemmed filaree (*Erodium cicutarium*), English plantain (*Plantago lanceolata*), black mustard (*Brassica nigra*), rose clover (*Trifolium hirtum*), and yellow star-thistle (*Centaurea solstitialis*). Ruderal areas are scattered throughout the BSA.

SOURCE: Bing 2020, SCAS 2020

DUDEK

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FIGURE 3 PAGE.- 1

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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Survey Area Boundary

Vegetation Communities and Land Covers

- AGS-Annual Grassland
- Ag-Agriculture
- CL-Canal
- D-Ditch
- DEV-Developed
- HBBB-Himalayan Black Berry Brambles
- LAN-Landscaped
- MD-Meister Ditch
- RGB-MH-Ripgut Brome-Mixed Herbs
- RUD-Ruderal
- Salexi-Sandbar Willow
- Salgoo-Black Willow
- Salgoo-Quelob/WH-Black Willow-Valley Oak/Wetland Herb
- Salgoo-Sallae-Black Willow-RedWillow
- Sallae-Red Willow
- Schacu-Typlat-Hardstem Bulrush-Broadleaf Cattail
- Schal-Shacu-California Bulrush-Hardstem Bulrush
- VOW-Valley Oak Woodland
- WAT- Water

SOURCE: Bing 2020, SCAS 2020

DUDEK

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FIGURE 3 PAGE.- 2

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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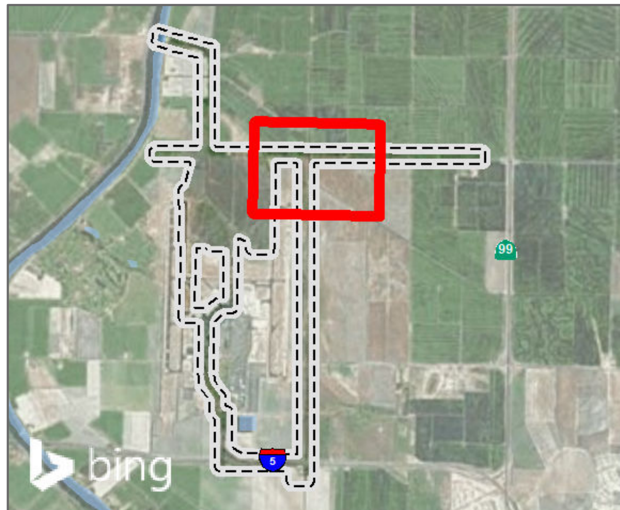

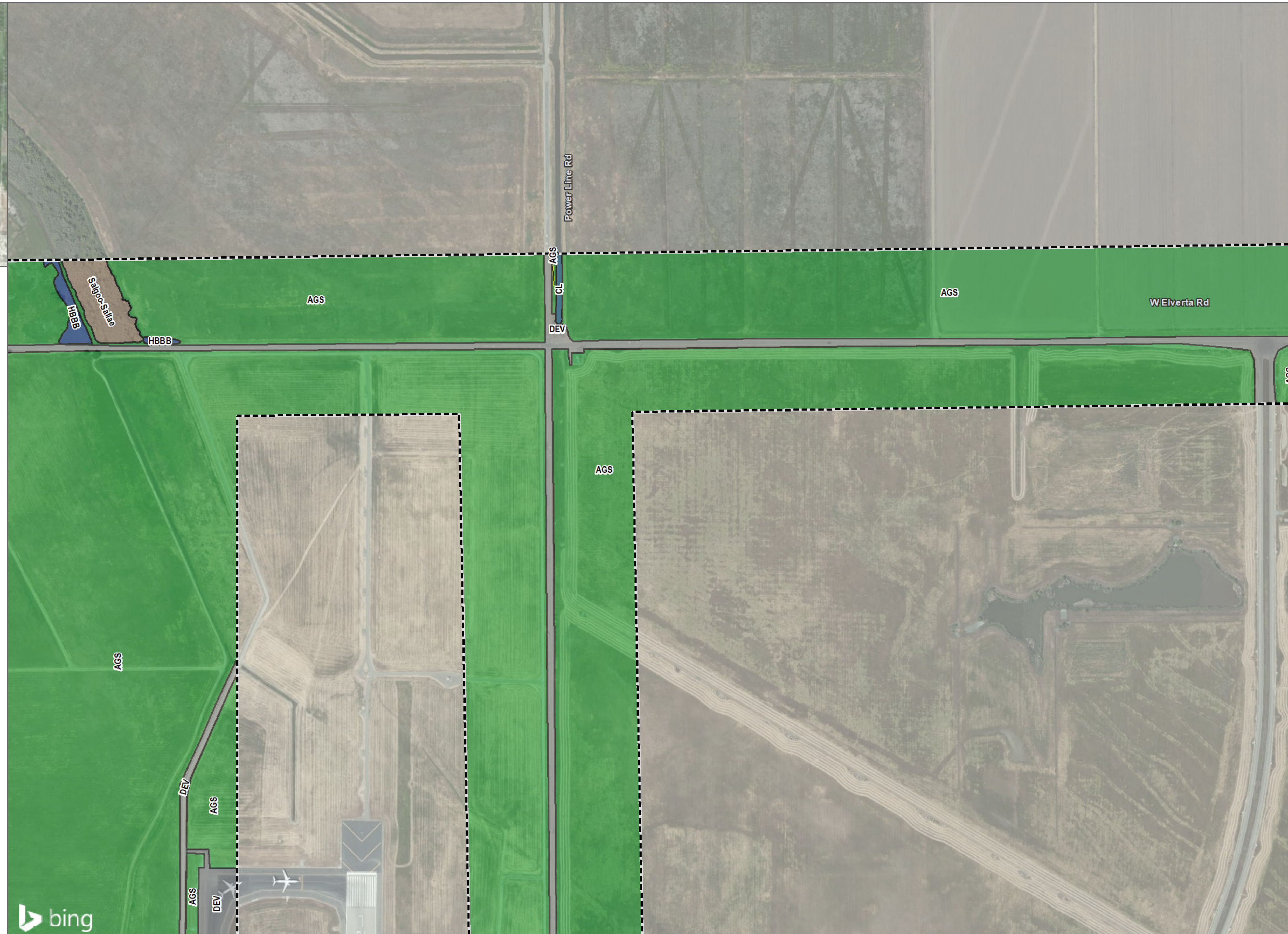

Survey Area Boundary

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- Schal-Shacu-California Bulrush-Hardstem Bulrush
- VOW-Valley Oak Woodland
- WAT- Water

SOURCE: Bing 2020, SCAS 2020

DUDEK

0 250 500 Feet

FIGURE 3 PAGE.- 3

Vegetation Communities and Land Cover Types

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- Schal-Shacu-California Bulrush-Hardstem Bulrush
- VOW-Valley Oak Woodland
- WAT- Water

SOURCE: Bing 2020, SCAS 2020

DUDEK

0 250 500 Feet

FIGURE 3 PAGE.- 4

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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Survey Area Boundary

Vegetation Communities and Land Covers

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- D-Ditch
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- HBBB-Himalayan Black Berry Brambles
- LAN-Landscaped
- MD-Meister Ditch
- RGB-MH-Ripgut Brome-Mixed Herbs
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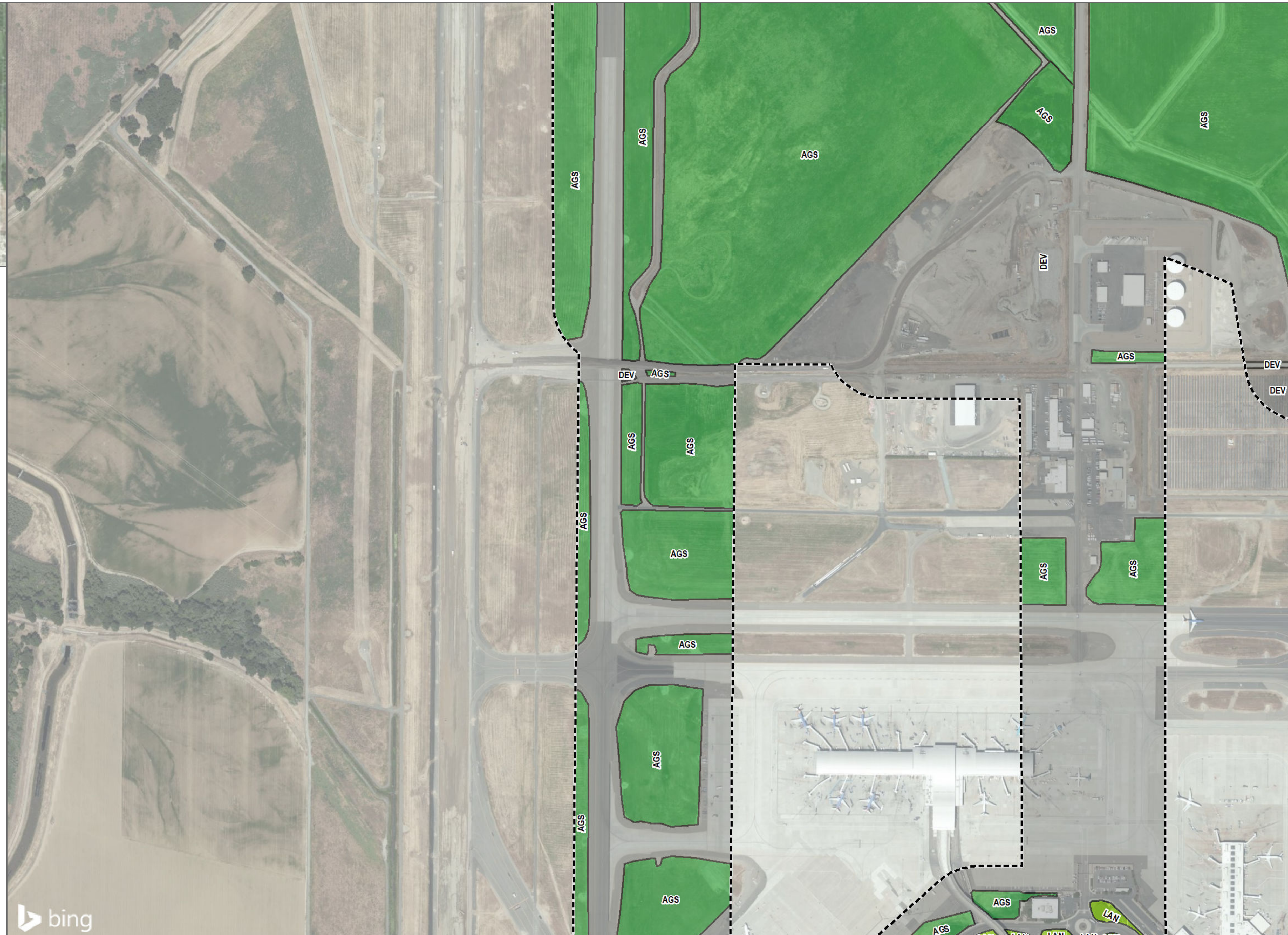
- WAT- Water



SOURCE: Bing 2020, SCAS 2020

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FIGURE 3 PAGE.- 5

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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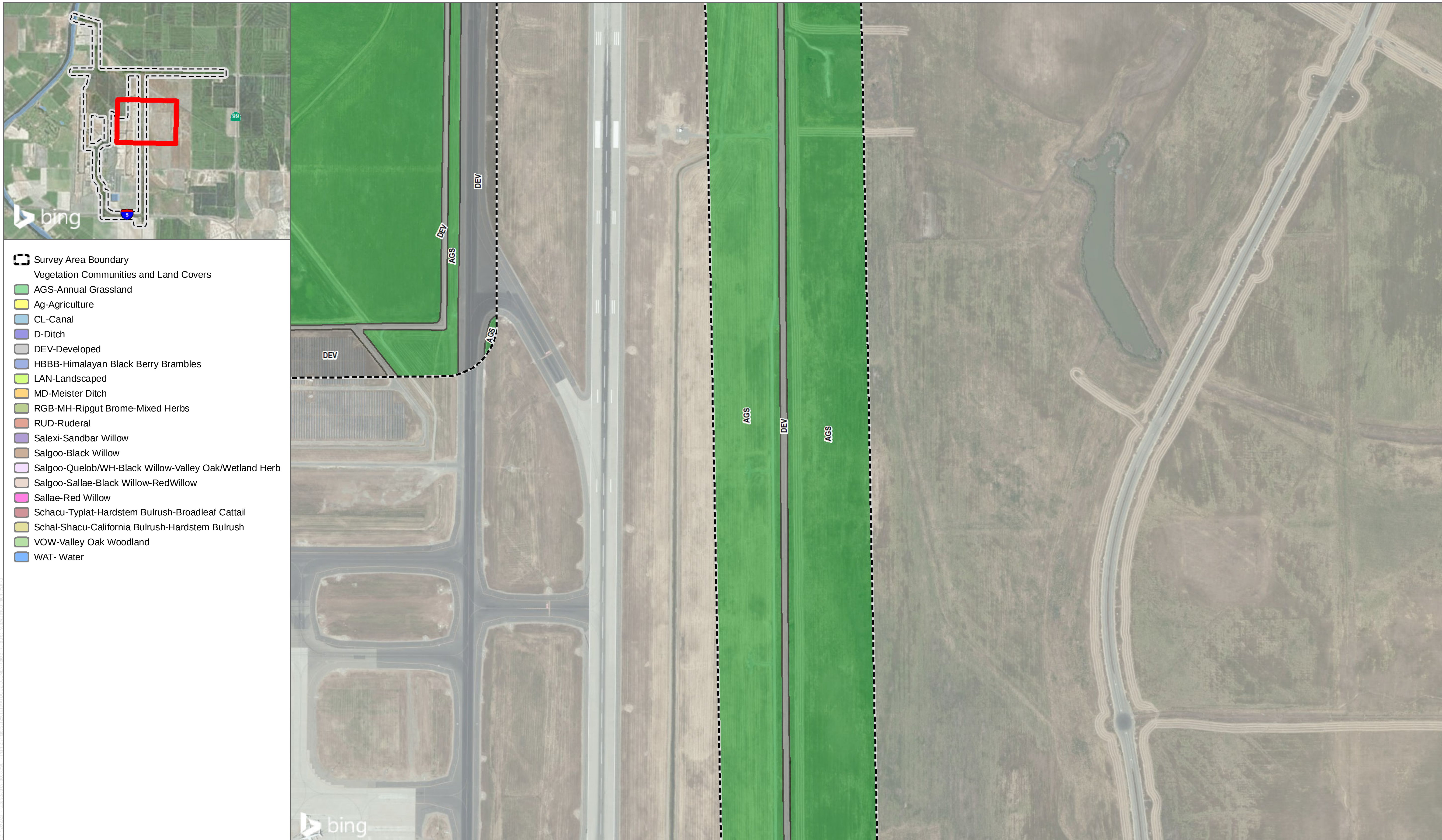

SOURCE: Bing 2020, SCAS 2020

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FIGURE 3 PAGE.- 6

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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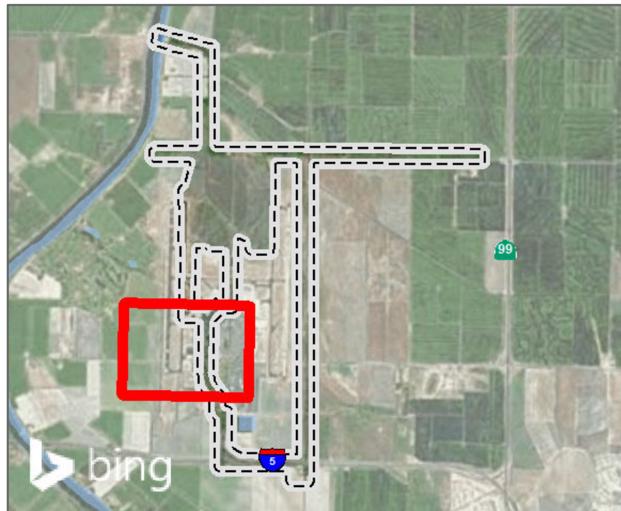

Survey Area Boundary

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- Sallae-Red Willow
- Schacu-Typlat-Hardstem Bulrush-Broadleaf Cattail
- Schal-Shacu-California Bulrush-Hardstem Bulrush
- VOW-Valley Oak Woodland
- WAT- Water

SOURCE: Bing 2020, SCAS 2020

DUDEK

0 250 500 Feet

FIGURE 3 PAGE.- 7

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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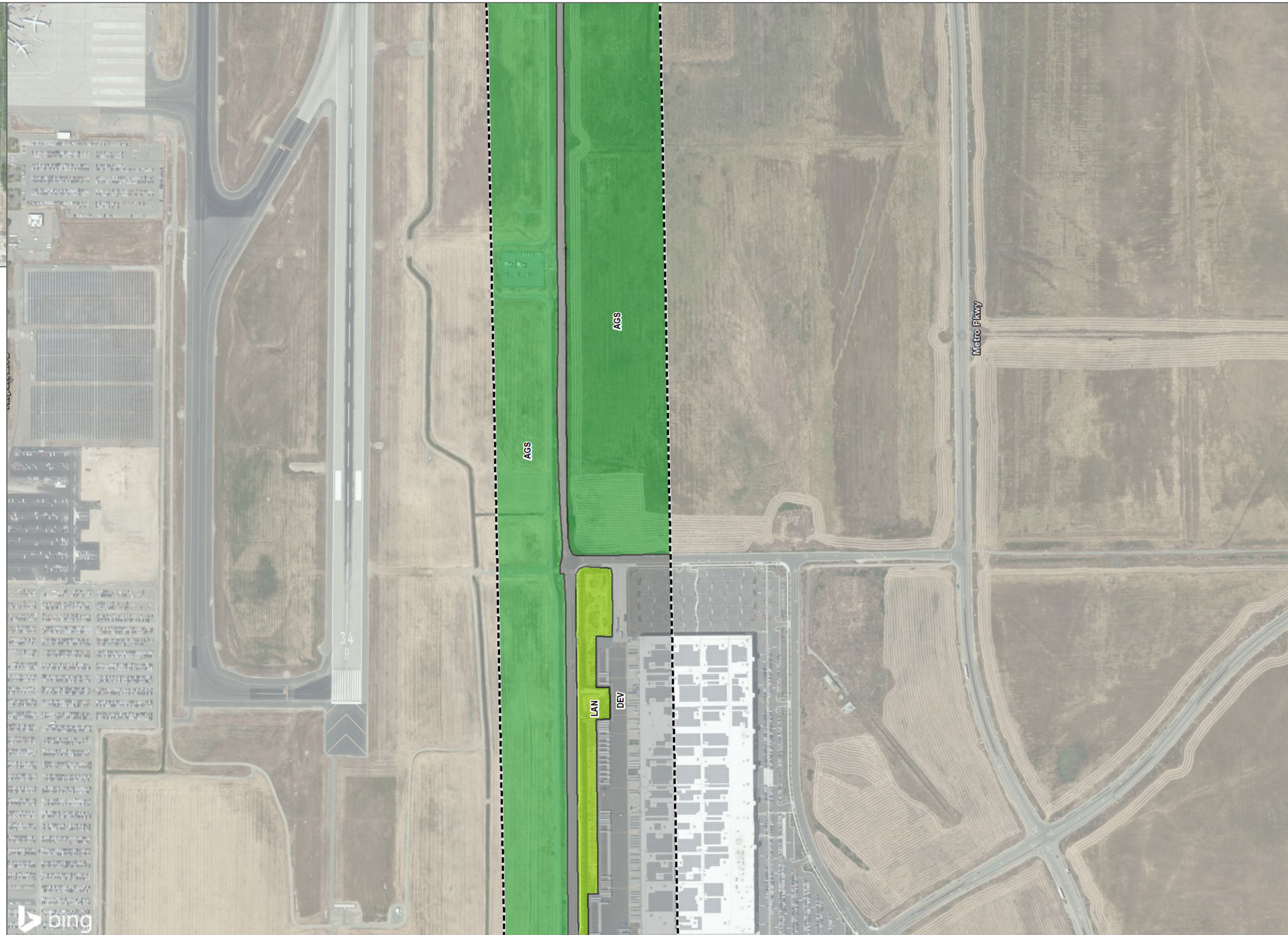
Survey Area Boundary

Vegetation Communities and Land Covers

- AGS-Annual Grassland
- Ag-Agriculture
- CL-Canal
- D-Ditch
- DEV-Developed
- HBBB-Himalayan Black Berry Brambles
- LAN-Landscaped
- MD-Meister Ditch
- RGB-MH-Ripgut Brome-Mixed Herbs
- RUD-Ruderal
- Salexi-Sandbar Willow
- Salgoo-Black Willow
- Salgoo-Quelob/WH-Black Willow-Valley Oak/Wetland Herb
- Salgoo-Sallae-Black Willow-RedWillow
- Sallae-Red Willow
- Schacu-Typlat-Hardstem Bulrush-Broadleaf Cattail
- Schal-Shacu-California Bulrush-Hardstem Bulrush
- VOW-Valley Oak Woodland
- WAT- Water



SOURCE: Bing 2020, SCAS 2020

DUDEK

0 250 500 Feet

FIGURE 3 PAGE.- 8

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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Survey Area Boundary

Vegetation Communities and Land Covers

- AGS-Annual Grassland
- Ag-Agriculture
- CL-Canal
- D-Ditch
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- HBBB-Himalayan Black Berry Brambles
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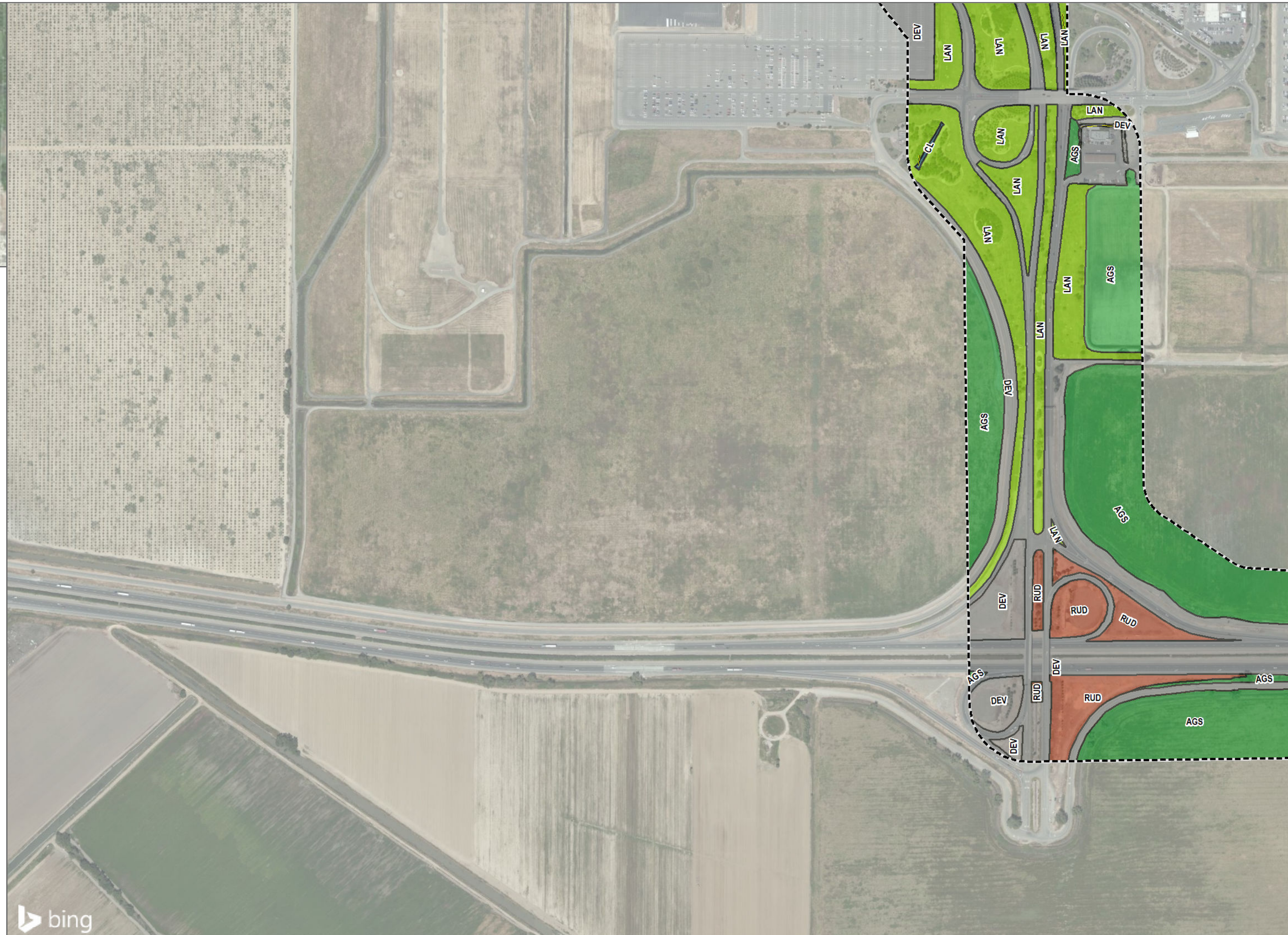
- Salgoo-Quelob/WH-Black Willow-Valley Oak/Wetland Herb
- Salgoo-Sallae-Black Willow-RedWillow
- Sallae-Red Willow
- Schacu-Typlat-Hardstem Bulrush-Broadleaf Cattail
- Schal-Shacu-California Bulrush-Hardstem Bulrush
- VOW-Valley Oak Woodland
- WAT- Water



SOURCE: Bing 2020, SCAS 2020

DUDEK

0 250 500 Feet

FIGURE 3 PAGE.- 9

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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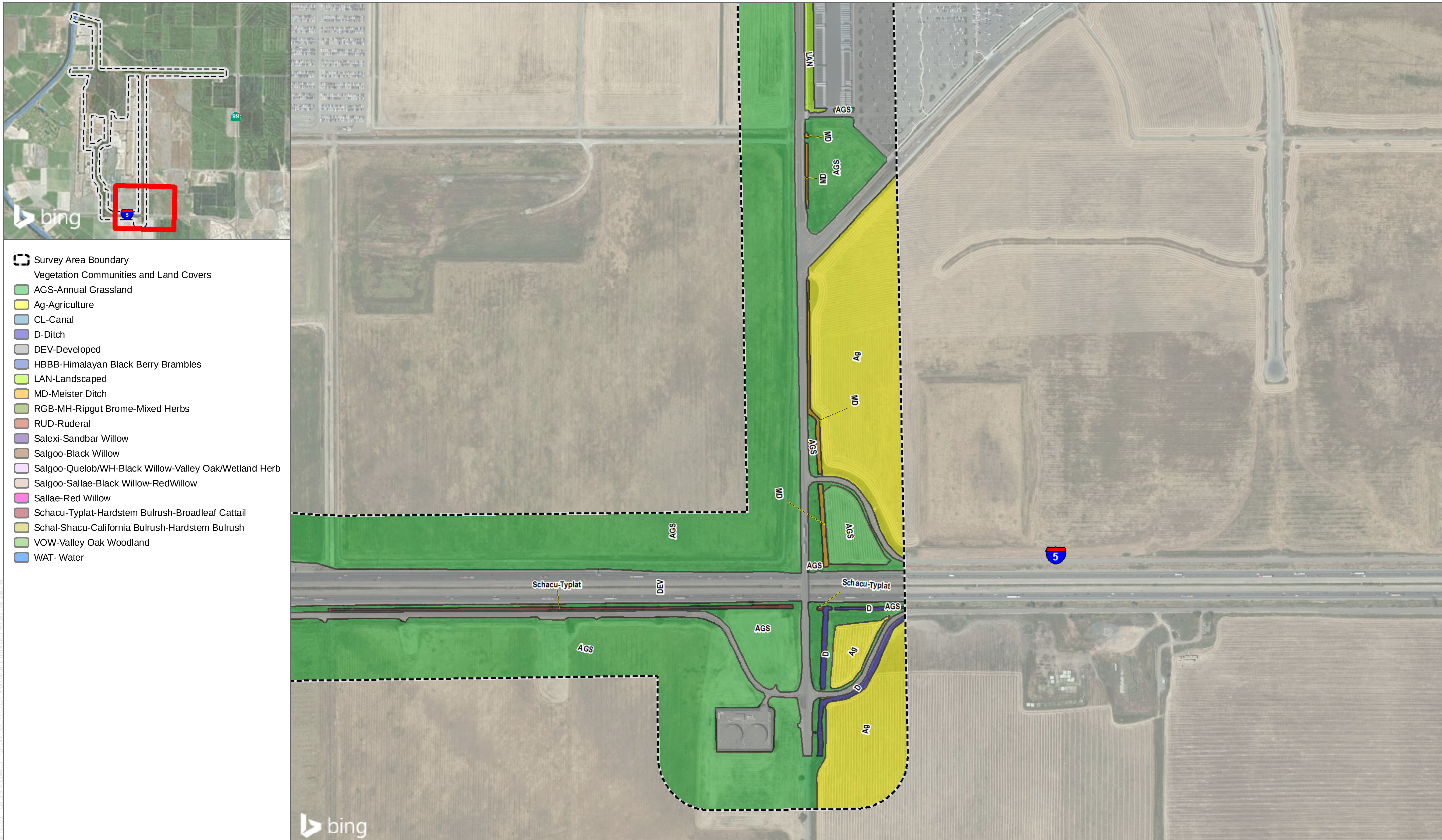

SOURCE: Bing 2020, SCAS 2020

DUDEK

0 250 500 Feet

FIGURE 3 PAGE.- 10

Vegetation Communities and Land Cover Types

Sacramento International Airport Cargo Facility Project

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Landscaped. Landscaped areas consist of manicured lawns and ornamental trees, shrubs, and herbs. These areas typically contain no native vegetation and are irrigated and maintained on a regular basis. Landscaped land cover is associated with road margins, parking lot islands, and planting areas surrounding buildings in the BSA.

Developed. This land cover type is limited to developed and/or disturbed areas that have been completely altered by anthropogenic or human activities. Within the BSA, developed land cover encompasses roadways, buildings, parking lots, taxiways, runways, and other developed areas. This land cover typically does not support vegetation, or contains landscaped areas consisting of ornamental plantings.

3.1.3 Sensitive Natural Communities

The CNDDB database query of the nine USGS 7.5-minute quadrangles containing and immediately surrounding the BSA identified four sensitive natural communities[2] in the project region: Great Valley cottonwood riparian forest, Great Valley mixed riparian forest, northern claypan vernal pool, and northern hardpan vernal pool. No vernal pools were identified within the BSA. Great Valley mixed riparian forest occurs adjacent to the Sacramento River and along several canals and ditches in the northwestern extent of the BSA. In addition to the sensitive natural communities identified in the CNDDB database, the following vegetation communities identified in the BSA are also considered sensitive by CDFW: valley oak woodland, mixed riparian forest, red willow forest, hardstem bulrush marsh, and fresh emergent marsh. The valley oak woodland and mixed riparian forest correspond to the Great Valley mixed riparian forest mapped in the CNDDB. As with the Great Valley mixed riparian forest, the majority of these vegetation communities occur in the northwestern extent of the BSA, north of Elverta Road, where restoration activities and natural vegetation communities are prevalent.

3.1.4 Essential Fish Habitat

USFWS Essential Fish Habitat for Central Valley steelhead (*Oncorhynchus mykiss*) and Pacific Salmon Essential Fish Habitat for fall and late fall-run Chinook salmon (*Oncorhynchus tshawytscha*) (NOAA 2018) is present in the Sacramento River to the west of the BSA. Both species occur in the Sacramento River during migratory periods in the vicinity of the BSA. There is no suitable habitat for either of these species in the BSA.

3.1.5 Wildlife Corridors and Habitat Linkages

Wildlife movement corridors have been recognized by federal agencies and the state as important habitats worthy of conservation. Wildlife corridors provide migration channels seasonally (i.e., between winter and summer habitats), and provide non-migrant wildlife the opportunity to move within their home range for food, cover, reproduction, and refuge. The Sacramento International Airport facility is subject to intensive wildlife control to prevent airplane-wildlife collision and is fenced with concrete-based chain link, so it does not likely function as a wildlife corridor. The Jacobs Slough area to the north of Elverta Road provides native habitat and linkages to the Sacramento River corridor. The agricultural areas surrounding other portions of the BSA provide open space with some habitat value.

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2 "Sensitive Natural Communities" are those that are listed by the CDFW due to the rarity of the community in the California. These communities have a State Rarity Ranking of S3 or lower.

3.2 Plant and Wildlife Species Observed

A total of 99 vascular plant species were observed in the BSA during the field assessment and subsequent wildlife surveys. A total of 31 wildlife species were observed in the BSA during the surveys. A compendium of observed plant and wildlife species identified during the field survey is included in Appendix C, Observed Species Compendium, and a photo record of the BSA is in Appendix A, Photo Record.

3.3 Special-Status Species

For this BRA, special-status plant and wildlife species are defined as those that are (1) listed, proposed for listing, or candidates for listing as Threatened or Endangered under the federal ESA;[3] (2) listed or candidates as Threatened or Endangered for listing under the California ESA;[4] (3) a CDFW Species of Special Concern;[5] and/or (4) a plant species listed on the CNPS Inventory with a CRPR of 1 or 2B. Note that special-status plant species with a CRPR of 3 and 4 were not considered as part of this BRA. Appendix D, Table of Special-Status Plant Species, and Appendix E, Table of Special-Status Wildlife Species, of this BRA summarize the potential for the occurrence of species identified during the literature and desktop review. Figure 4 provides the findings of the biological resources surveys within the BSA, Figure 5 provides known occurrence locations of special-status species and database search results

3.3.1 Special-Status Plant Species

Seventeen special status plants have been documented in the project vicinity (see Appendix D). Of these 17 special-status plant species, 15 have been removed from further consideration due to lack of suitable habitat within or adjacent to the BSA, no known occurrences within 2 miles of the BSA, and/or the site being outside of the species' known geographic or elevation range. These species with no potential to occur in the BSA are not discussed further in this document. Two special status plant species, Sanford's arrowhead (*Sagittaria sanfordii*) and Suisun marsh aster (*Symphyotrichum lentum*), have a moderate potential to occur in the BSA and are discussed in more detail below.

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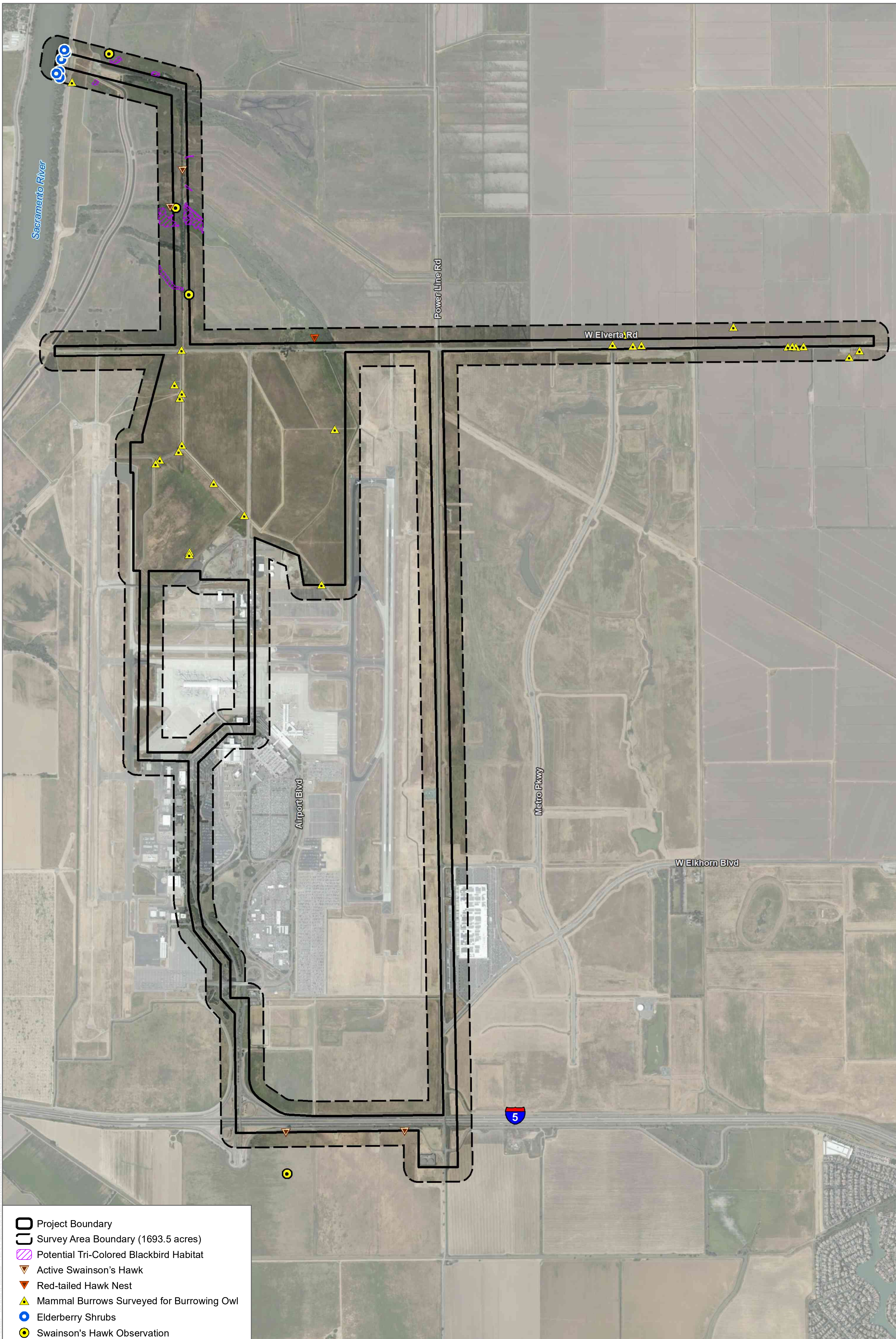
3 Federally Threatened = any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range (USFWS 2019b).
Federally Endangered = an animal or plant in danger of extinction within the near future throughout all or a significant portion of its range (USFWS 2019b).

4 State Threatened = a native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter (CDFW 2020b).
State Endangered = a native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (CDFW 2020b).

5 Species of Special Concern = a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following criteria – (1) is extirpated from the state or, in the case of birds, is extirpated in its primary season or breeding role; (2) is listed as federally, but not state, threatened or endangered; (3) meets the state definition of threatened or endangered but has not formally been listed; (4) is experiencing, or formerly experienced, serious (non-cyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status; and (5) has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for state threatened or endangered status (CDFW 2020d).



SOURCE: Bing 2020, SCAS 2020

DUDEK

0 900 1,800 Feet

FIGURE 4

Biological Survey Results – Terrestrial Wildlife

Sacramento International Airport Cargo Facility Project

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3.3.1.1 Sanford's Arrowhead

Sanford's arrowhead is not state or federally listed as rare, threatened, or endangered; however, it is a CRPR 1B.2 plant, meaning it is fairly endangered in California (CNPS 2020c). This species is an emergent perennial rhizomatous herb that inhabits assorted freshwater marshes and swamps. Sanford's arrowhead typically blooms from May through October, and sometimes as late as November. It is extirpated from Southern California and mostly extirpated from the Central Valley, mostly due to grazing, development, recreational activities, invasive plants, and channel alteration and maintenance (CNPS 2020c). Although this species has been typically documented farther east of the Sacramento River, there is potential for this species to occur within earthen canals and ditches that maintain water for most or all of the year. The nearest documented occurrence of this species was observed in 2008, approximately 5 miles east of the BSA at Hanson Regional Park (CDFW 2020a). This species was not observed during the 2020 site surveys, several of which were conducted when this species would be evident and identifiable.

3.3.1.2 Suisun Marsh Aster

Suisun marsh aster is not state or federally listed as rare, threatened, or endangered; however, it is a CRPR 1B.2 plant, meaning it is fairly endangered in California (CNPS 2020c). This species is a perennial rhizomatous herb that inhabits brackish and freshwater marshes and swamps. Suisun marsh aster typically blooms from May through November, and sometimes as early as April. It is seriously threatened by marsh habitat alteration and loss and erosion. Application of herbicides and the invasion of non-native plants along maintained ditches, canals, and streams are also possible threats to this species. Although this species is more commonly documented in the Sacramento River Delta to the south of the BSA, there is potential for this species to occur along the banks of the Sacramento River and canals and ditches. The nearest documented occurrence of this species was observed in 2013, approximately 7.5 miles south of the BSA in the Yolo Bypass (CDFW 2020a). This species was not observed during the 2020 site surveys, several of which were conducted when this species would be evident and identifiable.

3.3.2 Special-Status Wildlife Species

Results of the searches of the USFWS Information for Planning and Consultation database and the CDFW CNDDB nine USGS 7.5-minute quadrangles revealed 33 special-status wildlife species that have known occurrences in the BSA and surrounding area. Of these 33 special-status wildlife species, 26 special-status wildlife species were removed from consideration due to lack of suitable habitat within or adjacent to the BSA, no known occurrences within 2 miles of the BSA, and/or the site being outside of the species' known geographic or elevation range. These wildlife species with no potential or low potential to occur in the BSA are not discussed further in this document; however, they can be referenced in Appendix E.

The remaining seven special-status wildlife species that have a moderate potential to occur or that are known to occur in the BSA include burrowing owl, Swainson's hawk, white-tailed kite (*Elanus leucurus*), tricolored blackbird, valley elderberry longhorn beetle, northwestern pond turtle (*Actinemys marmorata*), and giant gartersnake. The species with a moderate potential to occur or that are known to occur are discussed in more detail below. In addition, Appendix E summarizes the potential for the occurrence of species identified during the literature and desktop review, and Figure 4 displays locations of known occurrences within 2 miles of the BSA.

3.3.2.1 Burrowing Owl

Burrowing owl is a California Species of Special Concern. With a relatively wide-ranging distribution throughout the west, burrowing owls are considered to be habitat generalists (Lantz et al. 2004). In California, burrowing owls are yearlong residents of open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats (Zeiner et al. 1990). Preferred habitat is typified by short, sparse vegetation with few shrubs, level to gentle topography, and well-drained soils (Poulin et al. 2011).

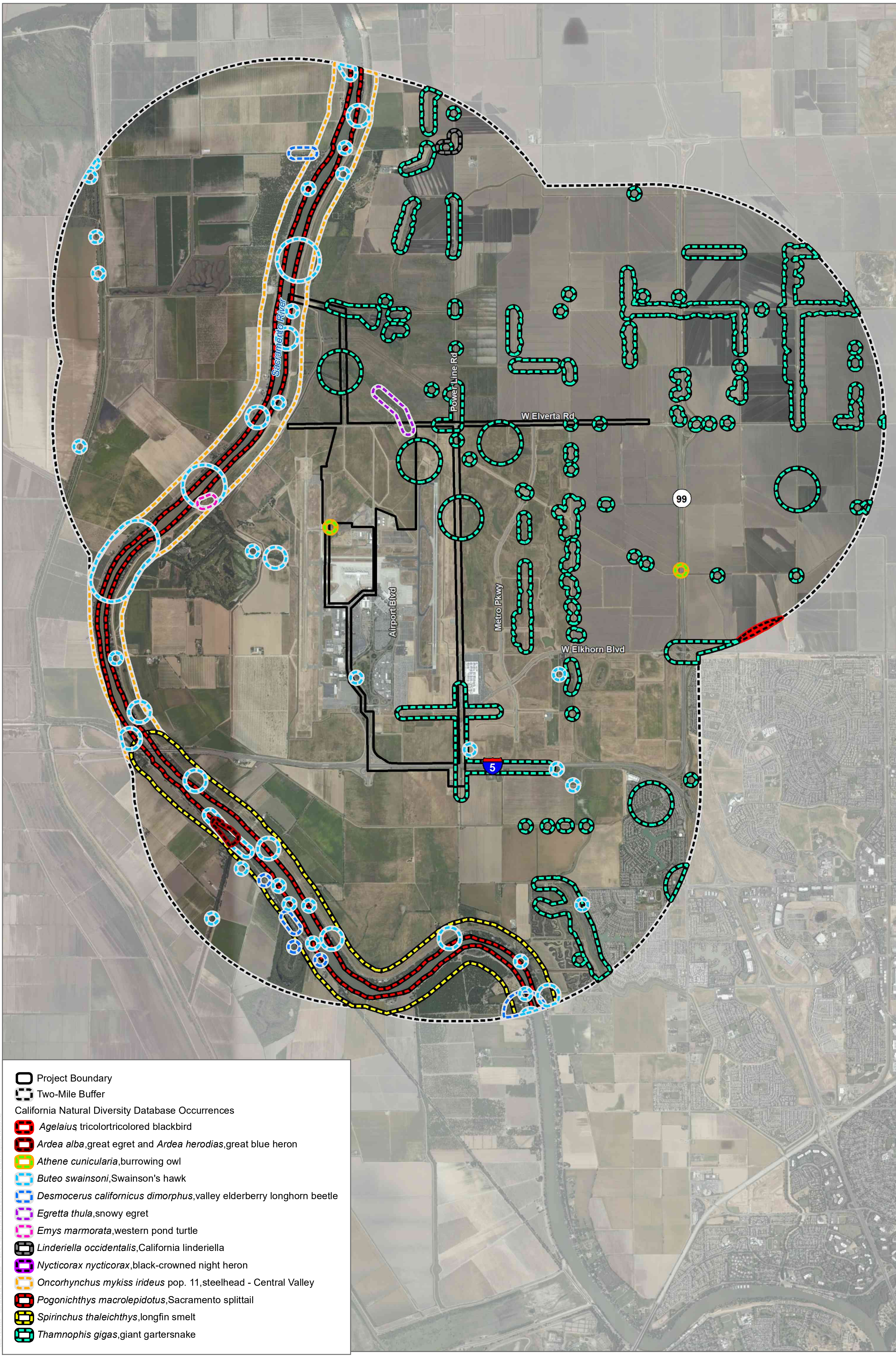
The presence of burrows is the most essential component of burrowing owl habitat, as they are required for nesting, roosting, cover, and caching prey (Poulin et al. 2011). In California, western burrowing owls most commonly live in burrows created by California ground squirrels (*Otospermophilus beecheyi*). Burrowing owls may occur in human-altered landscapes such as agricultural areas, ruderal grassy fields, vacant lots, and pastures if the vegetation structure is suitable (i.e., open and sparse), useable burrows are available, and foraging habitat occurs in close proximity (Gervais et al. 2008). Debris piles, riprap, culverts, and pipes can be used for nesting, secondary shelter sites, and roosting.

During the initial survey conducted between February 17 and 21, 2020, 22 burrows were identified and surveyed that could provide potential nesting locations for burrowing owl (Figure 4). Two additional surveys were conducted June 12, 2020, and July 14, 2020, to check all of the identified burrows again for owl sign, including regurgitated castings (pellets) of prey remains, scat (whitewash), and feathers. None of the identified burrows were occupied by burrowing owls, and no burrowing owls were observed during any of the surveys. . A nesting pair was documented along an irrigation canal within the BSA in 2006 (CDFW 2020a). This pair was only present for one breeding season, and no additional burrowing owl observations have been reported by SMF wildlife biologists. While no burrowing owls were observed during surveys, due to potentially suitable habitat in and surrounding the BSA and historic occurrences, it is possible that this species could occur within the BSA. Burrowing owls could occupy burrows or structures identified during the surveys, or newly constructed burrows that were not present at the time of survey.

3.3.2.2 Swainson’s Hawk

Swainson’s hawk is a state-listed Threatened species under the California ESA. It nests in California in the Central Valley and smaller adjacent valleys, the Klamath Basin, the Northeastern Plateau, Lassen County, and the Mojave Desert. It breeds in riparian areas, stands of trees in agricultural environments, oak savannah, Joshua trees (*Yucca brevifolia*) in the Mojave Desert, and juniper-sage flats. In the San Joaquin Valley, it nests in riparian areas and in isolated tree clusters, often near rural residences or other areas with some human disturbance. Alfalfa fields are the favored foraging areas of Swainson’s hawk in the Central Valley, but the species also forages in undisturbed grasslands, fallow agricultural fields, and some row crops.

Nesting and foraging habitat for this species is present within and adjacent to the BSA. The CNDDB lists 242 occurrences of this species within the nine-quad search area, including many occurrences within two miles of the BSA (CDFW 2020a, Figure 5).Surveys determined that Swainson’s hawk use undeveloped portions of the BSA and surrounding area for foraging and nesting. Airport wildlife biologists report observing Swainson’s hawk foraging regularly within the BSA. Four Swainson’s hawk pairs were observed within the BSA and Swainson’s hawk buffer area, and had confirmed active nests based on 2020 observations (Figure 4). The confirmed nest locations are outside of the core portion of the BSA and were located on the southern and northern periphery of the BSA outside of the primary airport facilities and operations areas.



SOURCE: Bing 2020, SCAS 2020

DUDEK

0 2,050 4,100 Feet

FIGURE 5

CNDDB Occurences

Sacramento International Airport Cargo Facility Project

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3.3.2.3 White-Tailed Kite

White-tailed kite is a California (CDFW) Fully Protected species. White-tailed kites feed principally on rodents, especially voles, in grasslands, marshes, and lowland scrub habitats, and nest in dense foliage in taller- to medium-size trees near foraging habitat. The BSA is in the known range for this species, although there are no known occurrences within two miles of the BSA (CDFW 2020a). No white-tailed kite were observed in the BSA, but potentially suitable foraging and nesting habitat is present in the undeveloped portions of the BSA, particularly north of Elverta Road.

3.3.2.4 Tricolored Blackbird

Tricolored blackbird is threatened under the California ESA and is a California Species of Special Concern that is protected for its nesting colonies. It typically nests in freshwater marshes with dense growths of emergent vegetation dominated by cattails or bulrushes, but has also established colonies in willows, blackberries (*Rubus* spp.), and a variety of other types of dense, herbaceous vegetation, such as thistles (*Cirsium and Centaurea* spp.) and nettles (*Urtica* sp.). Tricolored blackbirds forage in a variety of habitats, such as grasslands and croplands, where high densities of suitable insect prey are found.

Suitable nesting and foraging habitat for this species is present within the BSA. The closest occurrence of this species was documented in willow trees along an irrigation ditch approximately 2.5 miles east of the BSA from 1992 (CDFW 2020a, Figure 5). Potentially suitable nesting habitat for tricolored blackbird was mapped in the BSA in Himalayan blackberry brambles, sandbar willow thickets, and other freshwater marsh-type habitats north of Elverta Road along the potential drainage (Figure 4). There are no historic records of tricolored blackbirds occurring in this location, and no tricolored blackbirds were observed during surveys, but this species could occur within the BSA or surrounding areas due to the presence of potentially suitable nesting and foraging habitat.

3.3.2.5 Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle is listed as Threatened pursuant to the federal ESA, as amended. The historic range of this beetle is limited to moist valley oak woodlands along margins of rivers and streams in the lower Sacramento and lower San Joaquin Valleys (USFWS 2019). At the time of its listing, the beetle was known from less than 10 localities in Merced, Sacramento, and Yolo Counties (45 FR 52803-52807). Its current distribution is patchy throughout California's Central Valley and associated foothills (USFWS 1999b). The valley elderberry longhorn beetle is completely dependent on its host plant, elderberry (*Sambucus nigra* ssp. *cerulea*), which occurs in riparian and other woodland communities in California's Central Valley and the associated foothills. Female beetles lay their eggs in crevices on the stems or on the leaves of living elderberry plants. When the eggs hatch, larvae bore into the stems. The larval stages last for 1 to 2 years. The fifth instar larvae create emergence holes in the stems and then plug the holes and remain in the stems through pupation. Adults emerge through the emergence holes from late March through June. The short-lived adult beetles forage on leaves and flowers of elderberry shrubs.Valley elderberry longhorn beetle has been documented upstream and downstream of the BSA within the riparian corridor of the Sacramento River (Figure 5). Six elderberry shrubs were mapped in the northern boundary of the BSA near the Sacramento River. Stem counts were conducted at these shrubs and no exit holes were observed (Figure 4). This portion of the BSA is not proposed for any ground-disturbing activities. No other elderberry shrubs were observed in any other parts of the BSA.

3.3.2.6 Northwestern Pond Turtle

Western pond turtle, a California Species of Special Concern, uses both aquatic and terrestrial habitats. It is found in rivers, lakes, streams, ponds, wetlands, ephemeral creeks, reservoirs, agricultural ditches, estuaries, and brackish waters. Adults tend to favor deeper, slow-moving water, whereas hatchlings search for slow and shallow water that is slightly warmer. Terrestrial habitats are used for wintering and usually consist of burrows in leaves and soil. Western pond turtle nesting typically occurs from March through July, depending on local conditions (Zeiner et. al. 1990).

Targeted surveys for northwestern pond turtle were not conducted, and no northwestern pond turtles were observed during surveys of the BSA for other species. Sloughs, irrigation ditches, and other aquatic features in the BSA north of Elverta Road could provide suitable habitat for this species.

3.3.2.7 Giant Gartersnake

Giant gartersnake is listed as threatened under the federal ESA, as amended. No critical habitat has been designated for this species; however, a draft recovery plan was prepared in 1999 and finalized in September 2017 (USFWS 2017b).

This species is primarily aquatic and prefers marshes, sloughs, wetlands, agricultural ditches, rice fields, and other slow moving or still waters with emergent vegetation that is necessary for cover and foraging, and upland habitat consisting of grassy banks and openings for basking and aestivation in the summer and torpor in the winter (Hansen 1988). Essential habitat components consist of (1) adequate water during the snake's active period (i.e., early spring through mid-fall) to provide a prey base and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat; (3) upland habitat for basking, cover, and retreat sites; and (4) high-elevation uplands for cover and refuge from flood waters. Giant gartersnake are typically absent from larger rivers and other water bodies that support introduced populations of large, predatory fish, and from wetlands with sand, gravel, or rock substrates. Riparian woodlands do not provide habitat because of excessive shade, lack of basking sites, and absence of prey populations (USFWS 2017).

The results of the giant gartersnake habitat assessment demonstrated that potential habitat is present in the BSA (Appendix B) and that there is connectivity from known giant gartersnake population clusters to the features identified. However, connectivity and the likelihood of giant gartersnakes using many of these features is diminished by the character of the prevailing land cover now present in the BSA. Despite patches of suitable features, the likelihood of giant gartersnakes inhabiting much of the BSA is therefore lower than in those areas with prevailing wetland or rice habitat in other portions of the Natomas Basin. The results of occupancy analyses (Hansen et al. 2017) provide further support for this characterization.

Combined with extensive historic trap data, results of the assessment, the occupancy data, and patterns of spatial and temporal distribution of giant gartersnake, records suggest that occurrence is most likely within the northern, southern, and eastern extents of the BSA, mostly away from the areas under consideration for intensive development for the Project. Both habitat value and likelihood of occurrence within the Airport Operations Area (managed portions of the airport facility) are deemed low. Complete details and mapping are provided in the giant gartersnake habitat assessment, Appendix B.

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Appendix A

Photo Record

	
Photo 1. Typical annual grassland habitat in the central portion of the BSA.	**Photo 2.** Oak trees on margin of Himalayan blackberry filled ditch in northern portion of the BSA.
	
Photo 3. Mule deer in the Jacobs slough area; northern portion of the BSA.	**Photo 4.** Swainson's hawk perched in southern portion of the BSA.

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Appendix B

Giant Gartersnake Habitat Assessment

Giant Gartersnake (*Thamnophis gigas*) Habitat Assessment for Select Sacramento County Airport System Properties: Sacramento County, California

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1. INTRODUCTION

Executive Summary

This assessment was completed to evaluate giant gartersnake (*Thamnophis gigas*) habitat suitability for a subset of features on or near properties managed by the Sacramento County Airport System (SCAS), located in Sacramento County, California. The full scope of work is designed to evaluate habitat suitability and to ascertain the presence and distribution of giant gartersnakes in or near the SCAS study area boundaries provided by DUDEK, including collecting environmental DNA (eDNA) samples to augment and/or validate assessment results. Results of eDNA surveys are ongoing and results will be reported separately once analyses are complete.

The work described herein provides stand-alone results. However, results of prior occupancy analyses conducted within the Natomas Basin (Hansen *et al.* 2017) also have been incorporated to illustrate the broader probability of occupancy across the landscape encompassing the study area. Occupancy models use covariates for which we have data across the entire study area (e.g., road density, canal density, or land cover type) to develop a map of occupancy probability across the landscape. The map is useful to land managers for a variety of reasons, including identifying locations for future surveys where giant gartersnakes are most likely to occur and determining locations in the study area where maintaining habitat for giant gartersnakes is most critical.

The results of this assessment provide maps illustrating the relative suitability of features within the study area, as well a description of historic and current records of giant gartersnakes within the region. Results suggest that of the 62,303 linear feet of potential aquatic habitat were identified within the study area. Of this potential habitat, 12,225 linear feet (19.62 percent) were deemed suitable and 21,708 (34.84 percent) were deemed marginal. The remaining 28,370 linear feet (45.54 percent) of identified aquatic features were deemed unsuitable. Results of the assessment, the occupancy data, and patterns of spatial and temporal distribution of giant gartersnake records suggest that occurrence is most likely within the northern, southern and eastern extents of the project area. Both habitat value and likelihood of occurrence within the Airport Operations Area are deemed low.

2. HABITAT ASSESSMENT

To identify and classify areas of giant gartersnake habitat in the study area, aquatic features were evaluated using a list of 22 variables associated with giant gartersnake life history to characterize features using Geographic Information Systems (GIS), resulting in a database file depicting cumulative habitat scores for each feature. Aquatic reaches within the entirety of the study area have been projected as linear features on maps and classified by cumulative habitat score to show suitability for giant gartersnakes. This evaluation provides a series of GIS-generated maps illustrating habitat value by colored code, supporting a detailed classification, by trait, of habitat variables within the study area that can be used to guide planning and mitigation.

Methods

Though no formal habitat assessment protocol exists for evaluating giant gartersnakes, the methodology used for this assessment is comparable with those developed for other species that depend upon aquatic habitat (e.g., California tiger salamander1 and California red-legged frog2). The work product characterizes suitability based on giant gartersnake life history parameters, the condition and contiguity of regional landscape features, including aquatic corridors providing linkages to suitable habitats, and proximity and connectedness to historical and recent giant gartersnake observations. Though informal, this approach has been applied repeatedly under varying scenarios (both large- and small-scale) to inform decision making through the NEPA/CEQA process.

Habitat characteristics used in this evaluation are based on recognized minimum ecological requirements for giant gartersnakes. Each criterion is scored, with a final numerical total represented categorically using GIS. Where possible, all results are based on a visual assessment of habitat; where visual confirmation was not possible, values are based on interpretation of aerial imagery. Aquatic habitat values assigned to agricultural ditches, canals, and drains in the study area are based on aerial imagery and direct observation. This evaluation provides a series of GIS-generated maps illustrating habitat value by colored code, supporting a detailed classification, by trait, of habitat variables within the study area. Scoring methodologies used for this assessment are modified from Appendix D (Page 157) of the USFWS 1999 Draft Recovery Plan for the Giant Garter Snake (USFWS 1999). The evaluation form has been updated for greater rigor in assessing habitat value, incorporates a stepwise scale to reduce scoring ambiguity, and is modified for use in GIS analyses. The modified habitat evaluation and scoring form for GIS and instructions for completing this form for each assessment type are included as appendices to this document (**Appendix A** and **Appendix B**, respectively).

For scoring the values of specific habitat attributes, this assessment includes a consideration of aquatic and upland habitat within 200 feet of identified ditches, drains, channels, or swales. In its Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter

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[1] October 2003 Interim Guidance on Site Assessment and Field Surveys for Determining Presence or Negative Findings for the California Tiger Salamander; prepared jointly by the U.S. Fish and Wildlife Service and California Department of Fish and Game

[2] April 4, 1997 Memorandum 1-1-97-TA-1093 Dissemination of Interim Guidance on Site Assessment and Field Surveys for California Red-Legged Frogs; August 2005 Revised Guidance on Site Assessment and Field Surveys for California Red-Legged Frogs

Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo Counties, California (USFWS 1997, 2004), the USFWS incorporated a standard of 200 feet of upland on each bank side of linear habitat as suitable upland for giant gartersnakes when assessing a project's disturbance area. The 200-foot upland buffer has become standard in subsequent Biological Opinions and impact analyses and is used as a set criterion for assessing outlying habitat value. However, because an overarching goal of this assessment is to place the study area in regional perspective, both directly- and remotely-sensed land cover data was used to characterize landscapes outside of the 200-foot buffer to interpret the influence this may have on the aquatic features of interest.

GIS analysis was completed using the program ArcGIS Version 10.8. Georectified orthographic aerial photos acquired through the National Agriculture Imagery Program (NAIP) were used as base templates to ensure the accurate depiction of habitat surveyed. GIS files delineating the study area, provided by DUDEK, were used as a base to create an attribute table containing all ranking variables, with associated variables documented for each segment and tallied to provide a total habitat score. The symbol legend of these layers was then separated into three classes based on the total score. This classification results in a map of aquatic habitat with corresponding habitat values of individual segments distinguished by unique legend colors. Legend classes with corresponding point ranges are summarized in **Table 1**, below.

Table 1: Scoring value and range

Habitat Value	Point Range
Unsuitable	0-7
Marginal	8-13
Suitable	14-25

Classification values are based upon recognized habitat characteristics and personal experience and knowledge of giant gartersnakes and their life history, distribution, and habitat requirements. Although point breaks within this valuation (Table 1) are based upon giant gartersnake habitat and ecological requirements, they are somewhat arbitrary in nature. The scores for each habitat feature provided within the database should be consulted when considering specific habitat types or trends. Habitat valuation categories are defined below.

Suitable habitat is characterized by all of the features necessary to support permanent populations of giant gartersnakes, including: 1) sufficient water during the active summer season to supply cover and food such as small fish and amphibians; 2) emergent, herbaceous aquatic vegetation accompanied by vegetated banks to provide basking and foraging habitat; 3) bankside burrows, holes and crevices to provide short-term aestivation sites; 4) high ground or upland habitat above the annual high water mark to provide cover and refugia from floodwaters during the dormant winter season.

Marginal habitat is characterized by any combination of those features listed above needed to support transient giant gartersnakes on a temporary basis, or to act as connective corridors between areas of more stable or desirable habitat. This habitat need only possess the water, vegetation, and refugia required to provide minimal coverage for dispersing snakes. On its own, marginal habitat is considered incapable of supporting permanent populations of giant gartersnakes and is typically ephemeral, providing no permanent source of prey.

Unsuitable habitat is devoid of the water, vegetation, and refugia necessary to support giant gartersnakes for a meaningful time. Such habitat is generally composed of large rivers, lakes, gunite drains, or temporary swales that possess no water during the active spring and summer seasons. As such, unsuitable habitat corridors are no more likely to support giant gartersnakes than any non-aquatic environment, and if they do so, they do so only by chance. Transient features, such as shallow trenches and furrows intended only to direct winter runoff, typically do not persist through the remainder of the season, do not provide the aquatic habitat necessary to support giant gartersnakes for a meaningful time, and should therefore be assigned to this category. However, because transient features may still exhibit characteristics such as winter water, bank sun, and bank or upland vegetation, they can accumulate the number of points necessary to qualify as marginal habitat in this evaluation scheme. Wetted features lacking any supporting characteristics are also deemed unsuitable if the distance or connectivity to suitable habitat is likely to preclude their use as migration corridors.

Results

Within the study area, potential habitat consists of rice agriculture and the banks, open water, emergent marsh, and backwaters associated with agricultural water conveyance and flood control infrastructure. At the time of this analysis, approximately 62,303 linear feet of potential aquatic habitat were identified within the study area. Of this potential habitat, 12,225 linear feet (19.62 percent) were deemed suitable and 21,708 (34.84 percent) were deemed marginal. The remaining 28,370 linear feet (45.54 percent) of identified aquatic features were deemed unsuitable. The relative proportions of habitat suitability classes amongst features within the Project area are summarized below in **Table 2**. Visual depictions of results are provided in **Figures 1-4**, included as separate appendices to this report.

Table 2: Summary of aquatic habitat suitability within the study area

Feature Type	Area in Linear Feet (and Proportion of Total)			
	Suitable	Marginal	Unsuitable	Total
ditch, drain, or slough	12,225 (19.62)	21,708 (34.84)	28,370 (45.54)	62,303

Transitions in habitat character are evident among individual reaches, with quality generally improving from west to east, or from the sandy, lotic soils associated with the Sacramento River east levee and the rich, hydric clays of the floodplain at the core of the Natomas Basin. Although many of the interior drains and roadside ditches evaluated as part of this assessment are often wetted during the spring and summer giant gartersnake active season, they are ephemeral in nature, limiting the establishment of vegetation and the development of a suitable prey base. Many of the features evaluated reside within a heavily disturbed landscape consisting woodland, industrial development and other incompatible land types, which reduces the relative quality of potential habitats along these features. Despite these shortcomings, many of these features are either adjacent to or hydrologically connected to areas of permanent, suitable habitat in the rice-growing areas of the Natomas Basin, and therefore may function as transit corridors if snakes are present.

The northwestern portion of the study area (e.g., Jacobs Slough, P-Drain; **Figure 1 and Figure 4**) is largely comprised of fallow fields, grasslands, and woodland habitats. Margins of aquatic features are characterized by dense growth of woodland and riverine-riparian species, with an understory dominated by poison oak (*Toxicodendron diversilobum*), Himalayan blackberry (*Rubus armeniacus*), and California grape (*Vitis californica*) and an overstory dominated by valley oak (*Quercus lobata*). As such, features within this region are characterized by dense shade that limits the ability of giant gartersnakes to thermoregulate and which is considered a negative covariate of occupancy. Although channels possess adequate water for foraging and sufficient bank structure for sheltering, the nature of the vegetation largely reduces suitability. The P-Drain is a narrow channel with few open sections and little or no emergent aquatic vegetation, and therefore accumulates only enough points for a marginal ranking. In comparison, Jacobs Slough is wider with a higher degree of solar penetration, possesses a higher percentage of emergent aquatic vegetation, and therefore accumulates enough points for a suitable ranking. Both features are connected to the extant population of giant gartersnakes at the Prichard Lake Preserve.

The northeastern portion of the study area (e.g., Elverta Road; **Figure 1 and Figure 4**) is largely comprised of fallow fields and industrial development (south) and active rice agriculture (north). The evaluated roadside drain on the north side of Elverta Road and east of Powerline Road improves in quality from west-to-east, with the western portion possessing water only sporadically during the spring and summer giant gartersnake active season and therefore supports fewer covariates of occupancy such as bankside and aquatic vegetation and aquatic prey. As such, this segment accumulates only enough points in the habitat scoring schema for a marginal ranking. In contrast, the western segment is actively wetted during most of the spring and summer giant gartersnake active season and therefore supports a higher proportion of covariates of occupancy such as bankside and aquatic vegetation and aquatic prey. As such, this segment accumulates enough points in the habitat scoring schema for a marginal ranking. It is important to note that marginal habitat may support transient giant gartersnakes on a temporary basis, or to act as connective corridors between areas of more stable or desirable habitat. This habitat need only possess the water, vegetation, and refugia required to provide minimal coverage for dispersing snakes. On its own, marginal habitat is considered incapable of supporting permanent populations of giant gartersnakes and is typically ephemeral, providing no permanent source of prey. Because the entirety of this feature abuts active rice fields at the southern edge of known, occupied habitat and because giant gartersnakes have been observed within this feature, the probability of occupancy is high. However, this probability is likely diminished by ongoing urban and industrial development occurring on the south side of Elverta Road.

The central portion of the study area (e.g., Airport Operations Area; **Figure 1 and Figure 3**) is largely comprised of fallow fields and developed airport infrastructure. Although giant gartersnakes have been documented within this area in the past, changes in hydrology and water management within this area over the past two decades have significantly reduced habitat quality and trapping efforts conducted since the late 1990s have documented a corresponding decline in giant gartersnake occupancy here (e.g., Jones & Stokes 2005, 2006, 2007, 2008; Hansen, unpublished data). Although connected to other occupied areas by drainage infrastructure, features within the Airport Operations Area generally receive water only during precipitation events and therefore remain dry during the spring and summer giant gartersnake active season. Features that remain dry during spring and summer earn an unsuitable rating in the habitat ranking schema. Unsuitable habitat corridors are no more likely to support giant gartersnakes than any non-aquatic environment. Within this area, only southern end of Jacobs Slough possesses ample water and other positive attributes to achieve suitable or marginal rankings, including connectivity to known giant gartersnake populations. While sections of the Airport East Ditch also sustain water and achieve a suitable ranking, these features are largely isolated, therefore probability of occupancy is these features is low.

The southern portion of the study area (e.g., Powerline Road and N-Drain, South Bayou Way; **Figure 1** and **Figure 2**) is largely comprised of fallow fields and row crop agriculture. However, the features analyzed typically possess water year-round, are characterized by positive habitat attributes and are connected to occupied areas (e.g., central Natomas Basin via Lone Tree Canal and Fisherman's Lake via west drain). Although east of the study area, water features along South Bayou Way have supported giant gartersnakes as recently as 2019 (E. Hansen *unpublished data*). Although features spanning Interstate 5 and east of Powerline Road have been temporarily disrupted by the ongoing construction of the Metro Air Parkway Interchange, the aquatic features identified in this analysis have been retained and remain connected to occupied habitat. While suitability of these features is generally high and connectivity remains, giant gartersnakes have declined steadily south of Interstate 5 (e.g., Jones & Stokes 2005, 2006, 2007, 2008; Hansen, unpublished data), therefore the probability of occupancy is less than it would be in the central and northern portions of the Natomas Basin.

Proximity to Known Records

Giant gartersnakes are documented in the within the study area. A search of the California Natural Diversity Database (CNDDB 2020) shows abundant giant gartersnake records within and adjacent to the study area (**Figure 5**), with several giant gartersnakes documented within evaluated features. Although the CNDDB often pools clusters of records and some records are suppressed in the public version of the database, both the connectivity to occupied sites and persistence of compatible habitat characteristics suggests that giant gartersnakes can access all the features evaluated. Within the study area, recent records place giant gartersnakes at: 1) Prichard Lake Reserve at the northern terminus of the P Drain (Hansen 2013; Olson, pers, comm.); 2) the rice fields North of Elverta Road and east of Powerline Road (e.g., Jones & Stokes 2005, 2006, 2007, 2008; Hansen, unpublished data); and South Bayou Road, south of Interstate 5 (Hansen, unpublished data). Although there are records of giant gartersnakes within the Airport Operations Area (e.g., Meister Ditch. Airport East Ditch), the most recent trapping efforts failed to detect the species (Jones & Stokes 2005, 2006).

3. Environmental DNA Surveys

Giant gartersnakes are a secretive and evasive species that likely occurs at low density in many San Joaquin Valley locations. Surveys addressing current distribution and occupancy must, therefore, include survey and analytical methods (e.g. Halstead et al. 2009, 2011) that account for low expected detection probabilities. However, detection probabilities associated with trapping surveys may be inadequate when population densities are exceptionally low. Trapping is also hindered by theft and tampering in areas of public access, potentially impacting survey results and endangering the health of the animals present in the census population.

Under this task, we used eDNA based methods (Schumer *et al.* 2019) to obtain population occupancy data that complements or surpasses current visual encounter and aquatic trapping surveys, both of which are associated with low or imperfect rates of detection (Halstead et al. 2011). Environmental DNA methods provide a means of addressing limitations of visual and trapping surveys, because they 1) are cost-effective and feasible to deploy over a large survey area, 2) unambiguously identify target organisms and 3) are sensitive to trace amounts of DNA in sampled material (Jerde et al. 2011; Thomsen et al. 2010). Given that molecular diagnostic techniques may be more sensitive than visual methods (Wilcox et al. 2016), the eDNA information is used to obtain the critical presence/absence data that trapping surveys may fail to provide.

The presence of cryptic species is ascertained by using molecular genetic assays to detect DNA that has been shed into the environment. The eDNA approach differs from traditional sampling in that a given survey does not capture the target organisms themselves, but the biological material those organisms leave in their vicinity that contain a “signal” of their genetic identity. Organisms liberate DNA into their surrounding environment by leaving behind indicators such as slime, scales, epidermal cells or feces (Janosik and Johnston 2015). Biological material containing DNA can be captured and isolated from water (or soil) samples, where purified total DNA can be interrogated for specific species of interest through use of molecular biology techniques (Jerde et al. 2011). The high detection probabilities of eDNA methods makes this approach suitable for monitoring the performance and compliance of species protection efforts. Preliminarily, given the scientific literature and recent experience of our team in doing this work for GGS surveys, a reasonable assumption is that the probability of detecting giant gartersnakes is high (>0.90) at 100 meters in a uni-directionally flowing system such as toe drains, agricultural canals, and other waterways.

Methods

Environmental DNA field sampling and laboratory protocols followed procedures described in Bergman et al. (2016). Water samples in the norther portion of the study area (i.e., Jacobs Slough, P-Drain) were collected from the bank at 100-meter (328-foot) intervals in portions of the study area where water was present. Two filters were collected per site during each sampling event and sampling at each site was repeated after a period of approximately two weeks. For each sampling event, water was filtered directly from the water body upstream of the boat at an approximate depth of 6 inches below the surface using sterile Saint Gobain XL-60 silicon tubing (Tygon®; internal diameter 6.3mm), and a portable Masterflex1 L/S Easy-Load II peristaltic pump (Cole-Parmer®) powered by a cordless hand drill. Water samples were filtered through a Millipore Sterivex™-GP 0.45µm sterile filter unit (EMD Millipore). No water was transported or stored during sampling nor was any water transported between sampling sites; instead all filtration occurred directly on the boat at each site. Sample filtrate was captured and measured in graduated flasks to verify the volume of each sample. Filtered water was then poured over the side of the boat after completion of sampling at each site. To eliminate cross contamination between sites due to equipment or the investigator, sterile gloves and all sampling materials were pre-packaged and discarded after one use. Tubing and gloves were immediately disposed of after each use into a sealed trash bag on board. All filters were likewise considered single use. After filtration, the cylindrical filters were capped at each end, labelled with location ID, placed into a sterile secondary container, sealed, and immediately placed on ice. All filters were kept on ice in a cooler for the duration of the sampling event, after which they were transferred to a -20°C laboratory freezer. The filters were stored within individually sealed secondary containers at -20°C until DNA extraction.

To ensure that field equipment was free of contamination, DNA field controls were taken for each sample day. Each field control consisted of Sterivex™ filtered ultra-pure water processed in the same fashion as the field samples. The field controls were processed for the presence of giant gartersnake DNA in parallel with all samples. DNA extractions were conducted using PowerWater Sterivex™ DNA Isolation Kit (Mo Bio Laboratories, Inc.) following the manufacturer's recommended guidelines. A DNA extraction negative control was processed in parallel to ensure sample integrity throughout extraction procedure. The DNA extraction control consisted of Sterivex™ filtered ultrapure water only. DNA extraction controls were processed using the same equipment utilized to extract DNA from all samples. Each sample and all controls were analyzed in triplicate for the presence of the giant gartersnake DNA using a quantitative polymerase chain reaction (qPCR) primer (PCR is a technique used in molecular biology to amplify a single copy or a few copies of a piece of DNA across several orders of magnitude) and probe set developed by Cramer Fish Science (Schumer *et al.* 2019).

Each qPCR replicate consisted of a 5 ul reaction volume. Each 5 ul qPCR reaction was composed of 1x Applied Biosystems TaqMan Universal PCR Master Mix, No AmpErase UNG (Applied Biosystems™), 900nm final primer concentration, 60nm final probe concentration, and 1 ul DNA template. Thermocycling was performed using a Bio-Rad CFX 96 Real time System (Bio-ad Laboratories, Inc.) with the following profile: 10 minutes at 95°C, 40 cycles of 15 second denaturation at 95°C and 1 minute annealing-extension at 60°C. Six template control (NTC) reactions were run on the plate with the samples template controls consisted of 1ul of ultrapure water replacing DNA template within reaction volume. Three positive control reactions consisting of 20ng/ul giant gartersnake DNA template were also tested in parallel to ensure consistent PCR performance. All PCR master mixes were made inside a UV PCR enclosed workstation. DNA template was added to master mix outside of the UV PCR workstation on a dedicated PCR set up workbench. All PCR reactions were conducted on instruments located outside of the main lab in a separate portion of the building. Results of the qPCR reactions were analyzed using BioRad CFX manager v3.1 (Bio-Rad Laboratories, Inc.). A sample was considered positive for the presence of giant gartersnake DNA if any one of the three replicates showed logarithmic amplification within 40 quantification cycles (Cq).

Results

Environmental DNA was collected at 16 sites emphasizing features such as Jacobs Slough and P-Drain where water was prevalent in the northwest portion of the study area (**Figure 1**, **Figure 4**). Because sampling will be conducted during two, separate time intervals results are incomplete and will be provided once laboratory analyses are complete.

4. Discussion

The results of this assessment demonstrate that potential habitat is present in the study area and that there is connectivity from known giant gartersnake population clusters to the features identified. However, connectivity and the likelihood of giant gartersnakes using many of these features is diminished by the character of the prevailing landcover now present in the study area. While much of the study area was formerly farmed in rice, except for features at the northern and eastern ends of the study area (**Figures 1-4**) that are abutted by managed marsh or rice agriculture, the bulk of the landscape is either developed (e.g., the Airport Operations Area, the Amazon distribution hub), fallow, or else managed as upland and is therefore dry. Biological monitoring conducted in support of the Natomas Basin Habitat Conservation Plan since the 1990s provides a clear description of landscape conversion that has gradually diminished habitat value for giant gartersnakes within the study area, and the frequency of detections within the study area has declined correspondingly (e.g., Jones & Stokes 2005, 2006, 2007, 2008). Despite patches of suitable features, the likelihood of giant gartersnakes throughout much of the study area is therefore lower than in those with prevailing wetland or rice habitat in other portions of the Natomas Basin. The results of occupancy analyses (Hansen *et al.* 2017) provide further support for this characterization.

Occupancy models identify covariates that are associated with the probability of occupancy (i.e., presence) at a location and are completed using multiple covariates modeled across the landscape as opposed to isolating individual features in the way that an isolated assessment does. Such models and resulting maps can be useful to resource managers for a variety of reasons, including: 1) increased ability to efficiently plan and prioritize maintenance work, particularly in relation to potential mitigation; 2) ability to prepare an avoidance and implementation strategy that is compatible with relevant operations and maintenance activities and can be leveraged into permits; and 3) ability to document increases in populations/distribution and hence the efficacy of avoidance and minimization measures. Contributing to this analysis, the presented occupancy model (**Figure 5**) illustrates that the bulk of the study area has a lower probability of giant gartersnake occupancy in the identified features than elsewhere in the Natomas Basin. These results align clearly with known patterns of distribution of both historic and current records. The occupancy model did not include historic records, but rather used multi-year trapping and capture data derived throughout the Sacramento Valley, including multiple sites in the Natomas Basin and is therefore based on records of demonstrated occurrence. The comparison of known locality records, the occupancy results, and site-level assessment presented in the report strongly suggest that the probability of giant gartersnake occurrence through all but the northern and eastern extent of the study area is low relative to other sites.

Combined with extensive trap data, results of the assessment, the occupancy data, and patterns of spatial and temporal distribution of giant gartersnake records suggest that occurrence is most likely within the northern, southern and eastern extents of the project area. Both habitat value and likelihood of occurrence within the Airport Operations Area are deemed low.

5. References

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Appendix A: Habitat Evaluation and Scoring Form (GIS)

Giant Garter Snake (*Thamnophis gigas*)

Site Name:____**Site ID:**___________________
GeneralCharacteristic:____**Permanent/Transient**[1]

USGS 7.5' Topo Quad________________________ **Township**_______ **Range**________

Surveyor/Affiliation: __________________________________ **Date(s):** ____________

Scores: 0=absent/none 1=present/low (0-25%) 2=moderate (25-75%) 3=high (75-100%)

Factor	Score
1. Still or slow-flowing water over silt substrate	+ ( )[2]
2. Flowing water over sand, gravel, rock or cement substrate	-- ( )[2]
3. Water available[3]	
a) Winter only (runoff) or sporadic availability	+ ( )[2]
b) April through October only (e.g. irrigation)	+ ( )[2]
c) All year (e.g. perennial marsh or channel)	+ ( )[2]
4. Banks are sunny	+ ( )
5. Banks shaded by overstory vegetation	-- ( )
6. Aquatic or emergent vegetation present	+ ( )
7. Terrestrial vegetation present	
a) On banks	+ ( )
b) In adjacent uplands	+ ( )
8. Subterranean retreats present[3]	
a) In banks	+ ( )[2]
b) In adjacent uplands	+ ( )[2]
9. Prey fish present	+ ( )[2]
10. Introduced gamefish present	-- ( )[2]
11. Prey amphibians present	+ ( )[2]
12. Site subject to severe seasonal or tidal flooding	-- ( )[2]
13. Adjacent land use[3]	
a) Rice, marsh, or wetland	+ ( )[2]
b) Upland	+ ( )[2]
c) Row Crop or horticultural	-- ( )[2]
d) Urban or developed public area	-- ( )[2]
14. Disturbance due to human recreational or maintenance activities	-- ( )[2]
15. Connectivity to known populations of GGS	+ ( )[2]

[1] ***transient habitat designation results in a total adjusted score of 0 points***
[2] ***indicates presence/absence only***
[3] ***factors within these fields are scored cumulatively***

Total:

Adjusted Total[1]**:**

Appendix B: Instructions for Completing the Habitat Evaluation and Scoring Form

1. Still or slow-flowing water over silt substrate

This category is checked if bank habitat adjacent to water is composed of soil, silt, or mud in flows no greater than 3 mph. Water in this category will often be dark or murky rather than clear, of the type observed in marshes, sloughs, or irrigation canals. This category is determined by presence or absence only and receives a positive score.

2. Flowing water over sand, gravel, rock or cement substrate

This category is checked if channel or bank habitat is composed of an impermeable substrate of the type listed above defining this category and may include the presence of bank side cinders or fine concrete riprap placed for erosion control. Water in this category will often be clear, associated with flows exceeding 3 mph, of the type typically observed in flowing streams or rivers where silt or sediment will not persist. This category is determined by presence or absence only and receives a negative score.

3. Water available:

a) Winter only (runoff) or sporadic availability
b) April through October only (e.g. irrigation)
c) All year (e.g. perennial marsh or channel)

Factors in this category are based upon the persistence of all water within 200 feet of observed habitat. Factors in this category are cumulative, are determined by presence or absence only, and receive positive scores.

4. Banks are sunny

This category is checked if bank habitat adjacent to water receives direct sunlight. Availability of sunlight is determined by the ability of GGS to access sun for basking, and does not include areas where vegetation or topography prevents such access. This category receives positive scores determined by percentage of sunlight present. Percentage classes and corresponding point values are included on the Habitat Evaluation and Scoring Form.

5. Banks shaded by overstory vegetation

This category is checked if bank habitat adjacent to water receives shade obstructing direct sunlight. This category is designed to complement and weight category 4, and receives negative scores determined by percentage of shade present. Percentage classes and corresponding point values are included on the Habitat Evaluation and Scoring Form.

6. Aquatic or emergent vegetation present

This category is checked if bank side aquatic habitat is characterized by aquatic vegetation which persists above the water level (*e.g.* cattails, bulrushes, primrose or hyacinth). This category receives positive scores determined by the percentage of aquatic vegetation present. Percentage classes and corresponding point values are included on the Habitat Evaluation and Scoring Form.

7. Terrestrial vegetation present
a) On banks
b) In adjacent uplands

This category is checked if bank habitat or adjacent uplands within 200 feet of aquatic habitat are characterized by vegetation (*e.g.* grasses, brush, low shrubs or Himalayan blackberry). This category receives positive scores determined by the percentage of terrestrial vegetation present. Percentage classes and corresponding point values are included on the Habitat Evaluation and Scoring Form.

8. Subterranean retreats present
a) In banks
b) In adjacent uplands

This category is checked if bank habitat or adjacent uplands within 200 feet of aquatic habitat are characterized by burrows, holes, or cracks either in the soil or under debris. Factors within this category are cumulative, are determined by presence or absence only, and receive positive scores.

9. Prey fish present

This category is checked if small aquatic prey fish (*e.g.* carp, mosquitofish, or blackfish) are present within aquatic habitat. This category is determined by presence or absence only and receives a positive score.

10. Introduced gamefish present

This category is checked if large, predatory gamefish (*e.g.* black bass, striped bass, channel catfish) are present within aquatic habitat. This category is determined by presence or absence only and receives a negative score.

11. Prey amphibians present

This category is checked if amphibians (e.g. bullfrog, treefrog, red-legged frog) are present within or near aquatic habitat. Note that toads do not constitute preferred prey for the giant garter snake and are not included when scoring this category. This category is determined by presence or absence only and receives a positive score.

12. Site subject to severe seasonal or tidal flooding

This category is checked if habitat is subject to prolonged inundation of upland terrestrial habitat by seasonal floodwaters or persistent tidal flows. This category is determined by presence or absence only and receives a negative score.

13. Adjacent land use

a) Rice, marsh, or wetland
b) Upland
c) Row Crop or horticultural
d) Urban or developed public area

Factors in this category are based upon dominant land use within 200 feet of observed habitat. Factors in this category are cumulative, are determined by presence or absence only and receive positive or negative scores as indicated on the Habitat Evaluation and Scoring Form.

14. Disturbance due to human recreational or maintenance activities

This category is checked if habitat is subject to prolonged or regular intense disturbance by human recreational or maintenance activities (*e.g.* fishing, boating, walking, or farming, mowing, burning, or scraping of bankside vegetation). Activities are considered regular if they occur more than 50% of the time between March and November. This category is determined by presence or absence only and receives a negative score.

15. Connectivity to known populations of GGS

This category is ranked by distance, with occurrence records falling within 10, 5, and 1 mile(s) of the observed habitat receiving scores of 1, 2, and 3 points, respectively. The date of the last recorded observation associated with the record is not considered.

Appendix C: Plates and Figures

Figure 1: Key to Plates

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Figure 2: Plate 1 (results)

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Figure 3: Plate 2 (results)

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Figure 4: Plate 3 (results)

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Figure 5: Study Area Relative to Modeled Probability of Occupancy and Known Giant Gartersnake Occurrence Records

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Source: Sacramento County Airport System (SCAS)

July 21, 2020

Legend

Suitability

Suitable GGS Habitat*

Marginal GGS Habitat*

Not Expected to support GGS*

Study Area

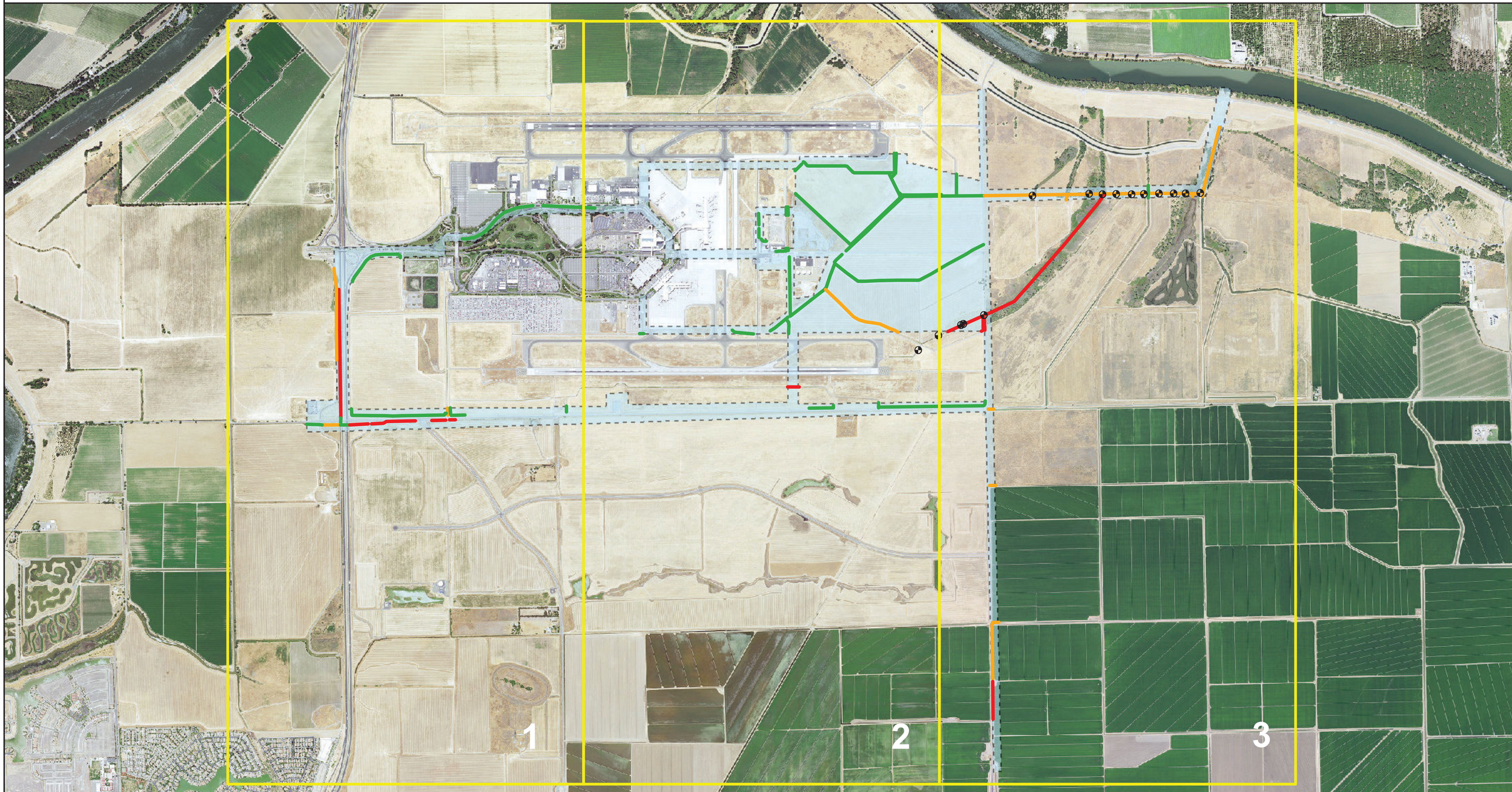
eDNA Sample

Plate 3

Suitability of Giant Gartersnake Habitat on Sacramento County Airport System Properties

0 2,500 5,000 10,000 Feet

Source: Sacramento County Airport System (SCAS) July 21, 2020



Legend **Suitability** Suitable GGS Habitat* Marginal GGS Habitat* Not Expected to support GGS* Study Area eDNA Sample Plate Boundaries **Key to Plates**

Suitability of Giant Gartersnake Habitat on Sacramento County Airport System Properties

0 2,500 5,000 10,000 Feet

Appendix C

Observed Species Compendium

Eudicots

Vascular Species

ADOXACEAE—MUSKROOT FAMILY

Sambucus nigra ssp. *caerulea*—blue elderberry

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

Toxicodendron diversilobum—poison oak

APIACEAE—CARROT FAMILY

* *Anthriscus caucalis*—bur chervil
* *Conium maculatum*—poison hemlock
* *Daucus carota*—Queen Anne's lace
* *Foeniculum vulgare*—fennel

APOCYNACEAE—DOGBANE FAMILY

* *Vinca major*—bigleaf periwinkle

ASTERACEAE—SUNFLOWER FAMILY

Artemisia douglasiana—Douglas' sagewort
Baccharis pilularis—coyote brush
Bidens frondosa—devil's beggartick
* *Carduus pycnocephalus*—Italian plumeless thistle
* *Centaurea solstitialis*—yellow star-thistle
* *Cichorium intybus*—chicory
* *Cirsium vulgare*—bull thistle
* *Dittrichia graveolens*—stinkwort
Erigeron canadensis—Canadian horseweed
Grindelia stricta—Oregon gumweed
Helianthus annuus—common sunflower
* *Helminthotheca echioides*—bristly oxtongue
Holocarpha virgata—yellowflower tarweed
* *Senecio vulgaris*—old-man-in-the-Spring
* *Silybum marianum*—blessed milkthistle
Xanthium strumarium—cocklebur

BORAGINACEAE—BORAGE FAMILY

Amsinckia menziesii—Menzies' fiddleneck

BRASSICACEAE—MUSTARD FAMILY

* *Brassica nigra*—black mustard
* *Brassica rapa*—field mustard
* *Capsella bursa-pastoris*—shepherd's purse
  Cardamine oligosperma—little western bittercress
  Lepidium nitidum—shining pepperweed
* *Raphanus raphanistrum*—wild radish
* *Raphanus sativus*—cultivated radish

CARYOPHYLLACEAE—PINK FAMILY

* *Cerastium glomeratum*—sticky chickweed
  Spergularia macrotheca—sticky sandspurry
  Stellaria media—common chickweed*

CHENOPODIACEAE—GOOSEFOOT FAMILY

* *Chenopodium album*—lambsquarters

CONVOLVULACEAE—MORNING-GLORY FAMILY

* *Convolvulus arvensis*—field bindweed

EUPHORBIACEAE—SPURGE FAMILY

  Croton setiger—dove weed
* *Euphorbia maculata*—spotted sandmat

FABACEAE—LEGUME FAMILY

* *Albizia julibrissin*—silktree
* *Lotus corniculatus*—bird's-foot trefoil
  Lupinus bicolor—miniature lupine
* *Medicago polymorpha*—burclover
  Vicia americana—American vetch
* *Vicia villosa*—winter vetch

FAGACEAE—OAK FAMILY

  Quercus agrifolia—coast live oak
  Quercus lobata—valley oak

GERANIACEAE—GERANIUM FAMILY

* *Erodium cicutarium*—redstem stork's bill
* *Erodium moschatum*—musky stork's bill
* *Geranium dissectum*—cutleaf geranium

LYTHRACEAE—LOOSESTRIFE FAMILY

* *Lythrum hyssopifolia*—hyssop loosestrife

MALVACEAE—MALLOW FAMILY

* *Malva parviflora*—cheeseweed mallow

MONTIACEAE—MONTIA FAMILY

Calandrinia menziesii—red maids

Claytonia perfoliata—miner's lettuce

MYRSINACEAE—MYRSINE FAMILY

* *Lysimachia arvensis*—scarlet pimpernel

OLEACEAE—OLIVE FAMILY

Fraxinus latifolia—Oregon ash

* *Olea europaea*—olive

ONAGRACEAE—EVENING PRIMROSE FAMILY

Epilobium ciliatum—fringed willowherb

* *Ludwigia peploides*—floating primrose-willow

PAPAVERACEAE—POPPY FAMILY

Eschscholzia californica—California poppy

PLANTAGINACEAE—PLANTAIN FAMILY

* *Plantago lanceolata*—narrowleaf plantain

POLYGONACEAE—BUCKWHEAT FAMILY

* *Rumex crispus*—curly dock

* *Rumex pulcher*—fiddle dock

RANUNCULACEAE—BUTTERCUP FAMILY

* *Ranunculus muricatus*—spinyfruit buttercup

ROSACEAE—ROSE FAMILY

* *Rubus armeniacus*—Himalayan blackberry

RUBIACEAE—MADDER FAMILY

Galium aparine—stickywilly

SALICACEAE—WILLOW FAMILY

Populus fremontii—Fremont cottonwood

Salix exigua—sandbar willow

Salix gooddingii—black willow
Salix laevigata—red willow
Salix lasiolepis—arroyo willow

SAPINDACEAE—SOAPBERRY FAMILY
Acer negundo—box-elder

SOLANACEAE—NIGHTSHADE FAMILY
* *Solanum elaeagnifolium*—silverleaf nightshade
* *Solanum rostratum*—buffalobur nightshade

VERBENACEAE—VERVAIN FAMILY
* *Verbena litoralis*—seashore vervain

VITACEAE—GRAPE FAMILY
Vitis californica—California wild grape

Ferns and Fern Allies

Vascular Species

EQUISETACEAE—HORSETAIL FAMILY
Equisetum hyemale—scouringrush horsetail

Monocots

Vascular Species

ALISMATACEAE—WATER-PLANTAIN FAMILY
Alisma triviale—northern water plantain

CYPERACEAE—SEDGE FAMILY
Cyperus eragrostis—tall flatsedge
Schoenoplectus acutus—hardstem bulrush

JUNCACEAE—RUSH FAMILY
Juncus bufonius—toad rush
Juncus effusus—soft rush
Juncus xiphioides—irisleaf rush

POACEAE—GRASS FAMILY

* *Avena barbata*—slender oat
* *Bromus diandrus*—ripgut brome
* *Bromus hordeaceus*—soft brome
* *Cynodon dactylon*—Bermudagrass
* *Elymus caput-medusae*—medusahead
Elymus glaucus—blue wildrye
* *Festuca perennis*—perennial rye grass
* *Hordeum murinum*—mouse barley
* *Phalaris aquatica*—Harding grass
* *Poa annua*—annual bluegrass
Poa secunda—curly blue grass
* *Polypogon monspeliensis*—annual rabbitsfoot grass
* *Triticum aestivum*—common wheat

TYPHACEAE—CATTAIL FAMILY

Typha domingensis—southern cattail
Typha latifolia—broadleaf cattail

* signifies introduced (non-native) species

Wildlife

Birds

HAWKS

Accipiter cooperii—Cooper's hawk
Buteo swainsoni—Swainson's hawk
Buteo jamaicensis—Red-tailed hawk
Circus cyaneus—Northern harrier

JAYS, MAGPIES, AND CROWS

Aphelocoma californica—California scrub jay
Corvus corax—Common raven
Pica pica —magpie

BLACKBIRDS, ORIOLES, AND ALLIES

Agelaius phoeniceus—Red-winged blackbird
Euphagus cyanocephalus—Brewer's blackbird

TITMICE

Baeolophus inornatus—Oak titmouse

NEW WORLD VULTURES

Cathartes aura—Turkey Vulture

SHOREBIRDS

Charadius vaciferus—Killdeer
Numenius americanus—Long-billed curlew

WOODPECKERS

Dryobates nuttallii—Nuttall's Woodpecker

FALCONS

Falco sparverius—American kestrel

QUAILS, PHEASANTS, AND RELATIVES

Meleagris gallopavo —wild turkey

NEW WORLD SPARROWS

Melospiza melodia—Song sparrow

Melozone crissalis —California towhee

Pipilo maculatus—Spotted towhee

Zonotrichia leucophrys—Golden-crowned sparrow

MOCKINGBIRDS AND THRASHERS

Mimus polyglottos—Northern mockingbird

KINGLETS

Regulus calendula—Ruby crowned kinglet

FLYCATCHERS

Sayornis nigricans—black phoebe

STARLINGS AND ALLIES

Sturnus vulgaris—European starling

PIGEONS AND DOVES

Zenaida macroura—mourning dove

Mammals

CANIDS

Canis latrans—Coyote

UNGULATES

Odocoileus hemionus californicus—Mule deer

SQUIRRELS

Otospermophilus beecheyi—California ground squirrel

MUSTELIDS

Mephitis mephitis—Striped skunk

RACCOONS

Procyon lotor—Raccoon

HARES AND RABBITS

Sylvilagus audubonii—Desert cottontail

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Appendix D

Table of Special-Status Plant Species

Table B. Special-Status Plant Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations, Lifeforms, Blooming Period, and Elevation Range (feet)	Potential to Occur
Astragalus tener var. *ferrisiae*	Ferris' milk-vetch	None/ None/ 1B.1	Meadows and seeps (vernally mesic), Valley and foothill grassland (subalkaline flats)/ annual herb/ Apr–May/ 5–245	**Not expected to occur.** The BSA does not contain subalkaline flats, meadows or seeps. There are no known species within two miles of the BSA.
Astragalus tener var. *tener*	alkali milk-vetch	None/ None/ 1B.2	Playas, Valley and foothill grassland (adobe clay), Vernal pools; alkaline/ annual herb/ Mar–June/ 0–195	**Not expected to occur.** The BSA does not contain adobe clay or alkaline soils or vernal pool habitat. There are no known occurrences within two miles of the BSA.
Atriplex cordulata var. cordulata	heartscale	None/ None/ 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy); saline or alkaline/ annual herb/ Apr–Oct/ 0–1,835	**Not expected to occur.** Suitable saline or alkaline habitat for this species is absent from the BSA. There are no known occurrences of this species within two miles of the BSA.
Atriplex depressa	brittlescale	None/ None/ 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools; alkaline, clay/ annual herb/ Apr–Oct/ 0–1,045	**Not expected to occur.** Suitable alkaline clay soil substrates are absent from the BSA. There are no known occurrences within two miles of the BSA.
Centromadia parryi ssp. *parryi*	pappose tarplant	None/ None/ 1B.2	Chaparral, Coastal prairie, Meadows and seeps, Marshes and swamps (coastal salt), Valley and foothill grassland (vernally mesic); often alkaline/ annual herb/ May–Nov/ 0–1,375	**Not expected to occur.** No suitable prairie, chaparral, coastal salt marsh, or alkaline grassland present in the BSA. There are no known occurrences within two miles of the BSA.
Chloropyron palmatum	palmate-bracted bird's-beak	FE/ SE/ 1B.1	Chenopod scrub, Valley and foothill grassland; alkaline/ annual herb (hemiparasitic)/ May–Oct/ 15–510	**Not expected to occur.** No suitable alkaline soil substrates present in the BSA. There are no known occurrences within two miles of the BSA.
Downingia pusilla	dwarf downingia	None/ None/ 2B.2	Valley and foothill grassland (mesic), Vernal pools/ annual herb/ Mar–May/ 0–1,455	**Not expected to occur.** No suitable vernal pool habitat present in the BSA. There are no known occurrences within two miles of the BSA. The closest occurrence of this species was documented approximately 3 miles east of the BSA in 1993 (CDFW 2020a).

Table B. Special-Status Plant Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations, Lifeforms, Blooming Period, and Elevation Range (feet)	Potential to Occur
Extriplex joaquinana	San Joaquin spearscale	None/ None/ 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland; alkaline/ annual herb/ Apr–Oct/ 0–2,735	**Not expected to occur.** No suitable alkaline soil substrates present in the BSA. There are no known occurrences within two miles of the BSA.
Fritillaria agrestis	stinkbells	None/ None/ 4.2	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland; Clay, sometimes serpentinite/ perennial bulbiferous herb/ Mar–June/ 30–5,100	**Not expected to occur.** No suitable serpentine soil substrates, chaparral, cismontane, pinyon, or juniper woodland present in the BSA. Moreover, the BSA is at the lowest elevational limits for this species. There are no known occurrences within two miles of the BSA.
Gratiola heterosepala	Boggs Lake hedge-hyssop	None/ SE/ 1B.2	Marshes and swamps (lake margins), Vernal pools; clay/ annual herb/ Apr–Aug/ 30–7,790	**Not expected to occur.** Suitable vernal pool habitat for this species in absent from the BSA. Moreover, the BSA is at the lowest elevational limits for this species. There are no known occurrences of this species within two miles of the BSA.
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	None/ None/ 1B.2	Marshes and swamps (freshwater); Often in riprap on sides of levees/ perennial rhizomatous herb (emergent)/ June–Sep/ 0–395	**Low potential to occur.** Suitable habitat is present within the canals and ditches of the BSA. There is a known occurrence of this species documented along Tule Canal approximately 2 miles west of the BSA in 1996 (CDFW 2020a).
Legenere limosa	legenere	None/ None/ 1B.1	Vernal pools/ annual herb/ Apr–June/ 0–2,885	**Not expected to occur.** Suitable vernal pool habitat is absent from the BSA. There are no known occurrences of this species within two miles of the BSA.
Lepidium latipes var. *heckardii*	Heckard's pepper-grass	None/ None/ 1B.2	Valley and foothill grassland (alkaline flats)/ Mar-May/ 5-660	**Not expected to occur.** No suitable alkaline flats are present in the BSA. There are no known occurrences of this species within two miles of the BSA.

Table B. Special-Status Plant Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations, Lifeforms, Blooming Period, and Elevation Range (feet)	Potential to Occur
Puccinellia simplex	California alkali grass	None/ None/ 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; Alkaline, vernally mesic; sinks, flats, and lake margins/ annual herb/ Mar–May/ 5–3,050	**Not expected to occur.** Suitable alkaline soil substrates are absent from the BSA. There are no known occurrences of this species within two miles of the BSA.
Sagittaria sanfordii	Sanford's arrowhead	None/ None/ 1B.2	Marshes and swamps (assorted shallow freshwater)/ perennial rhizomatous herb (emergent)/ May–Oct(Nov)/ 0–2,130	**Moderate potential to occur.** Suitable habitat is present within the canals/ditches and wetlands of the BSA. There are no known occurrences of this species within two miles of the BSA.
Symphyotrichum lentum	Suisun Marsh aster	None/ None/ 1B.2	Marshes and swamps (brackish and freshwater)/ perennial rhizomatous herb/ (Apr)May–Nov/ 0–10	**Moderate potential to Occur.** The BSA contains suitable marsh riparian habitat for this species. The closest occurrence of this species was documented at the intersection of Garden Highway and West Reigo Road approximately 1.5 miles north of the BSA in 1927. Another occurrence was documented along the Sacramento River approximately 3 miles northwest of the BSA in 2018 (CDFW 2020a).
Trifolium hydrophilum	saline clover	None/ None/ 1B.2	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools/ annual herb/ Apr–June/ 0–985	**Not expected to occur.** Suitable alkaline soil substrates are absent from the BSA. There are no known occurrences of this species within two miles of the BSA.

Source: CDFW 2020a; CNPS 2020a.
Status Ranks:
California Rare Plant Rank (CRPR) 1B = plants rare, threatened, or endangered in California and elsewhere.
CRPR 2B = plants rare, threatened, or endangered in California but more common elsewhere.
Threat Rank .1 = seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).
Threat Rank .2 = moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat).

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Appendix E

Table of Special-Status Wildlife Species

Table C. Special-Status Wildlife Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Amphibians				
Ambystoma californiense	California tiger salamander	FT/ST, WL	Annual grassland, valley–foothill hardwood, and valley–foothill riparian habitats; vernal pools, other ephemeral pools, and (uncommonly) along stream courses and man-made pools if predatory fishes are absent	**No potential to occur.** Suitable habitat for this species is absent from the BSA. There are no known occurrences of this species within the nine-quad search area (CDFW 2020a).This species is not known from this area of Sacramento County, and there are no occurrences of this species within the nine-quad search area (CDFW 2020a).
Rana draytonii	California red-legged frog	FT/SSC	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	**No potential to occur.** The BSA does not contain suitable habitat for this species. There are no current records of this species occurring in Sacramento County.
Spea hammondii	western spadefoot	None/SSC	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture	**Low Potential For Occurrence.** The BSA does not contain typical suitable habitat for this species, such as standing ephemeral wetlands. There are no known occurrences within two miles of the BSA.
Reptiles				
Actinemys marmorata	northwestern pond turtle	None/SSC	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	**Moderate Potential to Occur.** Suitable aquatic and upland habitat for this species is present within the BSA. This species has been documented at the Elkhorn Pumping Station approximately 0.5 miles west of the BSA (CDFW 2020a).
Thamnophis gigas	giant garter snake	FT/ST	Freshwater marsh habitat and low-gradient streams; also uses canals and irrigation ditches	**Moderate Potential For Occurrence.** Suitable aquatic and upland habitat for this species is present within the BSA. The CNDDB lists 110 occurrences of this species within the nine-quad search area, many occurrences within two miles of the BSA (CDFW 2020a).

Table C. Special-Status Wildlife Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Birds				
Agelaius tricolor	tricolored blackbird	BCC/SSC, ST	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberrry; forages in grasslands, woodland, and agriculture	**Moderate Potential For Occurrence.** Suitable nesting and foraging habitat for this species is present within the BSA. The closest occurrence of this species was documented in willow trees along an irrigation ditch approximately 2.5 miles east of the BSA from 1992 (CDFW 2020a).
Athene cunicularia	burrowing owl	BCC/SSC	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	**Moderate Potential for Occurrence.** This species has been documented in the region and the BSA is within the known range of the species. Nesting habitat for this species is present along the irrigation canals, and multiple burrows were observed during the field survey. A nesting pair was documented along an irrigation canal within the BSA in 2006 (CDFW 2020a).
Buteo swainsoni	Swainson's hawk	BCC/ST	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	**Present.** Nesting and foraging habitat for this species is present within and adjacent to the BSA. The CNDDB lists 242 occurrences of this species within the nine-quad search area, including many occurrences within two miles of the BSA (CDFW 2020a). Documented nest trees are located within and adjacent to the BSA near the Sacramento River and Sacramento International Airport, and nesting pairs were documented during field surveys.
Charadrius alexandrinus nivosus (nesting)	western snowy plover	FT, BCC/SSC	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	**Not Expected to Occur.** Suitable pond nesting habitat is absent from the BSA. There are no known occurrences within two miles of the BSA.
Charadrius montanus (wintering)	mountain plover	BCC/SSC	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts	**Not Expected To Occur.** Known wintering sites are absent from the BSA.

Table C. Special-Status Wildlife Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT, BCC/SE	Nests in dense, wide riparian woodlands and forest with well-developed understories	**Low Potential To Occur.** This species has been documented in the region and the BSA is within the known range of the species. The BSA has riparian habitat but is not likely to be used for nesting due to the lack extent and size of the riparian habitat blocks. The closest extant occurrence of this species was documented approximately 4 miles northwest of the BSA in 2006 (CDFW 2020a).
Elanus leucurus	white-tailed kite	None/FP	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	**Moderate Likelihood of Occurrence.** The BSA has open grasslands and disturbed lands for foraging and riparian trees for nesting. The BSA is in the known range for this species, although there are no known occurrences within two miles of the BSA.
Laterallus jamaicensis coturniculus	California black rail	BCC/FP, ST	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations	**Not Expected To Occur.** The BSA has potentially suitable habitat, but is outside of the known range of the species.
Melospiza melodia ("Modesto" population)	song sparrow ("Modesto" population)	None/SSC	Nests and forages in emergent freshwater marsh, riparian forest, vegetated irrigation canals and levees, and newly planted valley oak (Quercus lobata) restoration sites	**Low Potential To Occur.** This species has been documented in the region and the BSA is within the known range of the species. The BSA does not contain typical wetlands and early successional riparian forest preferred by this species. The closest occurrence of this species was documented approximately 3.5 miles southwest of the BSA in 1990 (CDCFW 2020a).

Table C. Special-Status Wildlife Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Progne subis	purple martin	None/SSC	Nests and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands; in the Sacramento region often nests in weep holes under elevated freeways	**Low Potential To Occur.** The BSA has riparian habitat potentially suitable for nesting and foraging by this species. There are several known nesting areas within the City of Sacramento, although there are no known occurrences within two miles of the BSA (CDFW 2020a).
Riparia riparia	bank swallow	None/ST	Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration	**Not Expected To Occur.** The BSA lacks suitable nesting and foraging habitat. There are several documented nesting occurrences along the Sacramento and Feather Rivers upstream of the BSA (CDFW 2020a).
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	**Not Expected To Occur.** The BSA is outside of the current known range of this species. The closet occurrence is a specimen collected in 1877 approximately 3.5 miles southeast of the BSA (CDFW 2020a).
Fishes				
Archoplites interruptus (within native range only)	Sacramento perch	None/SSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley	**Not Expected To Occur.** The BSA is located outside of the species' known geographic range. Only occurrence in nine-quad search was documented in Lake Greenhaven/Brickyard Pond approximately 11 miles south of the BSA in 1973 (CDFW 2020a).
Hypomesus transpacificus	Delta smelt	FT/SE	Sacramento–San Joaquin Delta; seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay	**Not Expected To Occur.** The BSA is located outside of the species' known geographic range.
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	FT/None	Coastal basins from Redwood Creek south to the Gualala River, inclusive; does not include summer-run steelhead	**Not expected to Occur**. The BSA does not contain suitable habitat for this species. Occurs in the Sacramento River in the vicinity of the BSA.
Oncorhynchus tshawytscha pop. 6	Chinook salmon – Central Valley	FT/ST	Federal listing refers to populations spawning in Sacramento River and	**Not expected to Occur**. The BSA does not contain suitable habitat for this species. Occurs in the

Table C. Special-Status Wildlife Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
	spring-run ESU		tributaries. Adult numbers depend on pool depth and volume, amount of cover, and proximity to gravel. Water temps >27 C are lethal to adults.	Sacramento River in the vicinity of the BSA.
Oncorhynchus tshawytscha pop. 6	Chinook salmon – Sacramento River winter-run ESU	FE/SE	Spawns in the Sacramento River below Keswick Dam, but not in tributary streams. Requires clean, cold water over gravel beds with water temperatures between 6 and 14 C for spawning.	**Not expected to Occur**. The BSA does not contain suitable habitat for this species. Occurs in the Sacramento River in the vicinity of the BSA.
Pogonichthys macrolepidotus	Sacramento splittail	None/SSC	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay, and associated marshes	**Not Expected To Occur.** The BSA does not contain suitable habitat for this species. This species has been documented along an approximately 66-mile stretch of the Sacramento River in 1995, including the segment within the BSA (CDFW 2020a). However, this species' current range no longer includes the segment of the Sacramento River within the BSA.
Spirinchus thaleichthys	longfin smelt	FC/ST	Aquatic, estuary	**Not Expected To Occur.** The BSA does not contain suitable habitat for this species. This species has been documented along the Sacramento River both north and south of the BSA (CDFW 2020a).
Thaleichthys pacificus	euchalon	FT	Found in Klamath River, Mad River, Redwood Creek, and in small numbers in Smith River and Humboldt Bay estuaries.	**Not Expected To Occur.** The BSA is located outside of the species' known geographic range.

Table C. Special-Status Wildlife Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Mammals				
Antrozous pallidus	pallid bat	None/SSC	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	**Low Potential To Occur.** Trees within and adjacent to the BSA north of Elverta provide roosting habitat for this species. No bats nor their sign were detected during the field survey. There are no documented occurrences within two miles of the BSA.
Lasiurus blossevillii	western red bat	None/SSC	Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	**Low Potential To Occur.** Trees within and adjacent to the BSA north of Elverta provide roosting habitat for this species. No bats nor their sign were detected during the field survey. There are no documented occurrences within two miles of the BSA.
Taxidea taxus	American badger	None/SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	**Not Expected To Occur.** The BSA lacks suitable habitat and no significant burrows were detected during the field assessments. There are no documented occurrences within two miles of BSA.
Invertebrates				
Bombus crotchii	Crotch bumble bee	None/PSE	Open grassland and scrub communities supporting suitable floral resources.	**Not Expected To Occur.** There are no documented occurrences within two miles of BSA.
Bombus occidentalis	western bumble bee	None/PSE	Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease	**Not Expected To Occur.** There are no documented occurrences within two miles of BSA
Branchinecta lynchi	vernal pool fairy shrimp	FT/None	Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats	**Not Expected To Occur.** No ephemeral freshwater habitats, vernal pools, or swales present in the BSA. No known occurrences within two miles of the BSA.

Table C. Special-Status Wildlife Species with Potential to Occur in the BSA

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT/None	Occurs only in the Central Valley of California, in association with blue elderberry (Sambucus nigra ssp. caerulea)	**Moderate Likelihood of Occurrence.** Six elderberry shrubs are present in the BSA near the Sacramento River. This species has been documented upstream and downstream of the BSA within the riparian corridor of the Sacramento River.
Lepidurus packardi	vernal pool tadpole shrimp	FE/None	Ephemeral freshwater habitats including alkaline pools, clay flats, vernal lakes, vernal pools, and vernal swales	**Not Expected to Occur.** No vernal pools or other suitable habitat present in the BSA. No known occurrences within two miles of the BSA.

Source: CDFW 2020a; USFWS 2020a; NAS 2020.
Status Rank:
- BCC = Bird of Conservation Concern
- FDL = Federally Delisted
- FP = Fully Protected
- FT = Federally Threatened
- SSC = Species of Special Concern
- ST = State Threatened
- WL = Watch List

Potential for Occurrence Ranks:
- Present: Species observed within the BSA.
- Moderate Likelihood of Occurrence = the species has not been documented in the vicinity but the BSA is within the known range of the species, and habitat for the species is present.
- Low Likelihood of Occurrence = the species has not been documented in the vicinity and the BSA is within the known range of the species, but habitat for the species is of low quality.
- Unlikely to Occur = the BSA is outside the known range of the species, and habitat for the species is either absent or of low quality.

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CC-1

GHG Assessment

Greenhouse Gas Emissions Assessment
SMF Cargo Facility Project and Master Plan Update
Sacramento County, California

Prepared by:

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LIST OF ABBREVIATED TERMS

AB	Assembly Bill
CAFE	corporate average fuel economy
CARB	California Air Resource Board
CCR	California Code of Regulations
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
CALGreen Code	California Green Building Standards Code
CPUC	California Public Utilities Commission
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CFC	Chlorofluorocarbon
CPP	Clean Power Plan
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
FR	Federal Register
GHG	greenhouse gas
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
LCFS	Low Carbon Fuel Standard
CH_4	Methane
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
$MTCO_2e$	million tons of carbon dioxide equivalent
MTP/SCS	Metropolitan Transportation Plan/Sustainable Communities Strategy
NHTSA	National Highway Traffic Safety Administration
NF_3	nitrogen trifluoride
N_2O	nitrous oxide
OAK	Oakland International Airport
PFC	Perfluorocarbon
SACOG	Sacramento Area Council of Governments
SB	Senate Bill
SFO	San Francisco International Airport
SJC	San Jose International Airport
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMF	Sacramento International Airport
SMUD	Sacramento Municipal Utility District
Sf	square foot
SF_6	sulfur hexafluoride
TAC	toxic air contaminants

1 INTRODUCTION

This report documents the results of a Greenhouse Gas (GHG) Emissions Assessment completed for the Sacramento International Airport Cargo Facility Project (Project) as part of the 2020 Sacramento Airport Master Plan Update (SMF Master Plan Update). The purpose of this GHG Emissions Assessment is to evaluate the potential construction and operational emissions associated with the Project and determine the level of impact the Project would have on the environment.

1.1 Background

Sacramento International Airport Master Plan EIR – 2007

The Sacramento International Airport (SMF) Master Plan lays out the expected development of the airport to the year 2020. In 2007, the Sacramento International Airport Master Plan EIR was prepared to evaluate the environmental impacts that may result from implementing the SMF Master Plan and presents conclusions on the significance of those impacts. The *Sacramento International Airport Master Plan Final EIR* (2007) addressed future development of the airport to the year 2020 in two phases. The first phase (Phase I) would occur from 2007 through 2013 and the second phase (Phase II) would occur from 2014 through 2020. The proposed Project is planned for the second phase of the Master Plan to expand its apron and construct three air cargo buildings. The Master Plan had also included conceptual plans for possible development at SMF in a third phase occurring beyond 2020. The Federal Aviation Administration recommends an airport master plan be updated every ten years, or when there is a large-scale shift proposed to airside or landside facilities. Currently, the SMF is preparing an update to the Master Plan as a continuation effort started by the Airport in 2016.

1.1 Project Location

The SMF is located west of the City of Sacramento and east of the Sacramento River, in Sacramento County. The airport is bordered by Interstate 5 (I-5) to the south and Power Line Road to the east. The Project site is located at SMF on the north side of the airport. The Project site is currently vacant with annual grassland and is bounded by West Elverta Road to the north, Earheart Drive to the east, Delta Road to the south, and an aircraft taxiway to the west. The 77.7-acre site is located approximately two mile north of the I-5 and three miles west of the State Route (SR) 99; refer to **Exhibit 1: Regional Location Map** and **Exhibit 2: Project Vicinity Map**.

1.2 Project Description

The Project is proposing to construct a cargo facility comprised of three buildings (e.g. a sortation building, a ground crew building, and an equipment maintenance building), associated parking, and a taxilane on the north side of the Sacramento International Airport on 77.7 acres. As shown in the **Exhibit 3: Conceptual Site Plan**, the cargo facility would include three buildings for a total of 950,000 square feet, 13 aircraft parking spaces, 1,314 automobile parking spaces, and 343 trailer parking spaces. Vehicular access to the project site would be provided on Earheart Drive from West Elverta Road. Access to the project site from Earheart Drive and West Elverta Road is proposed to be signalized.

Cargo Facility

The proposed Project consists of three buildings for a total of 950,000 square feet; refer to **Table 1: Building Summary**. The sortation building would include 900,000 square feet of warehouse area. The ground crew building would include 25,000 square feet of warehouse area. The maintenance building would include 25,000 square feet of warehouse area.

Table 1: Building Summary

Building	Total Building (sf)	Parking	
		Automobiles	Truck/Trailer
Sortation	900,000	1,314	343 trailer 141 truck
Ground Crew	25,000		
Maintenance	25,000		
Total	**950,000**		

Site Access

Vehicular access to the project site would be provided on two driveways on Earheart Drive. Vehicles would enter Earheart Drive from the northernmost entrance and exit the project site from the southernmost entrance. Access to the project site from Earheart Drive would be right-in the northernmost entrance and a left-out in the southernmost exit. The driveway entrance and exits would be unsignalized. Access to the project site from Earheart Drive and West Elverta Road is proposed to be signalized.

Parking

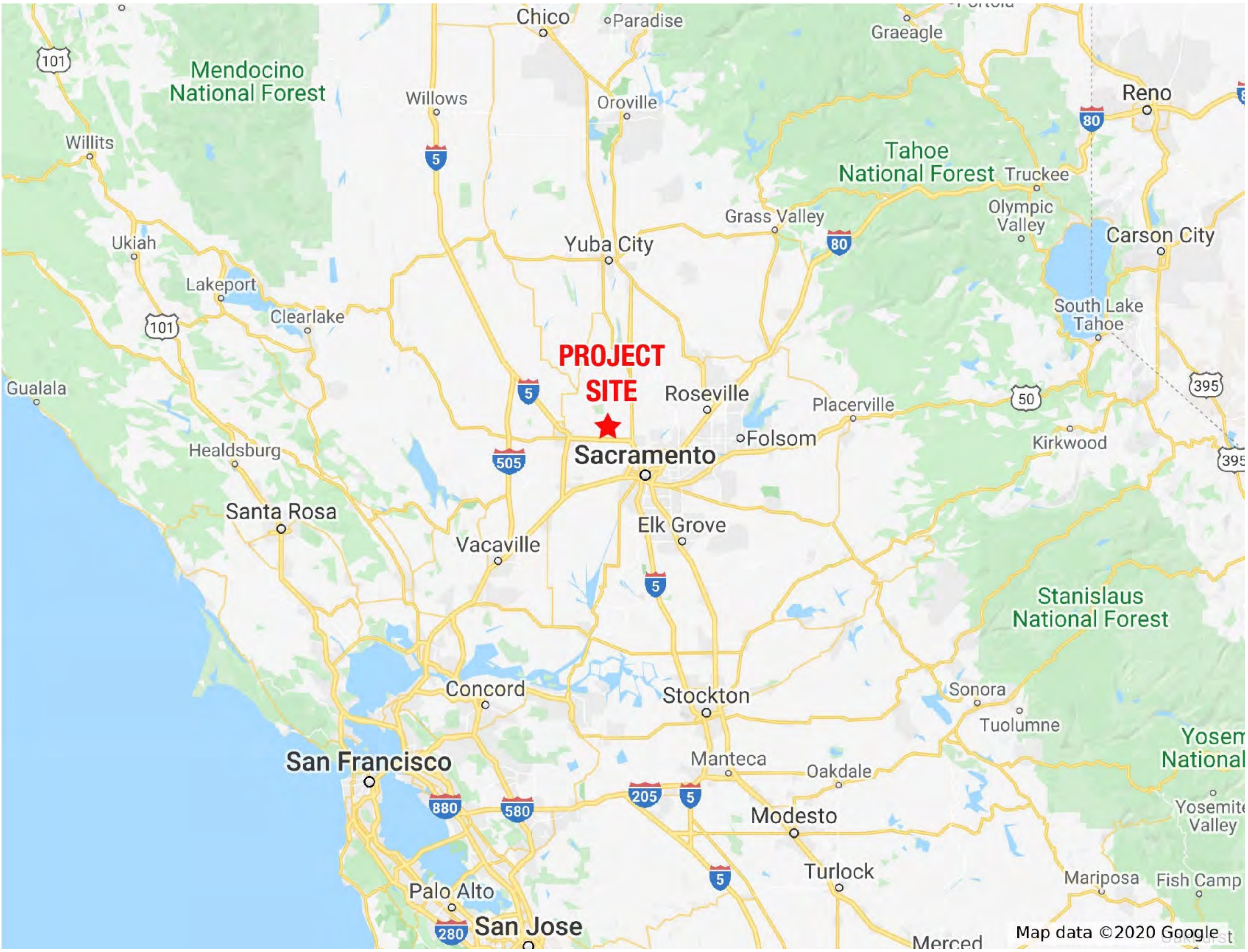
The Project provides 1,314 automobile parking spaces. Additionally, 13 aircraft parking spaces, 141 truck loading docks, and 343 trailer parking spaces.

Airport Master Plan Update

The SMF Master Plan Update involves airport expansion to accommodate growth over the next 20 years. Currently, more than 2.1 million domestic passengers and more than 1.6 million international passengers travel to airports outside of the Sacramento region to take flights.[1] Primarily, these passengers use airports in the Bay Area with San Francisco International Airport (SFO), Oakland International Airport (OAK), and San Jose International Airport (SJC) capturing the majority of the passenger service. Accordingly, if the Airport does not expand and/or provide additional passenger service that meets the need of traveler, these longer vehicular trips to Bay Area airports would be assumed to continue or even expand as the demand for service naturally increases with population growth over time. The provision of additional gates to serve this unmet local demand is a primary catalyst of the proposed Project.

[1] Campbell-Hill Aviation Group, LLC., *SMF Catchment Area Analysis,* April 2020 and Kimley-Horn, VMT Assessment & Local Access, Safety, and Circulation Study, July 2020.

Exhibit 1: Regional Location Map

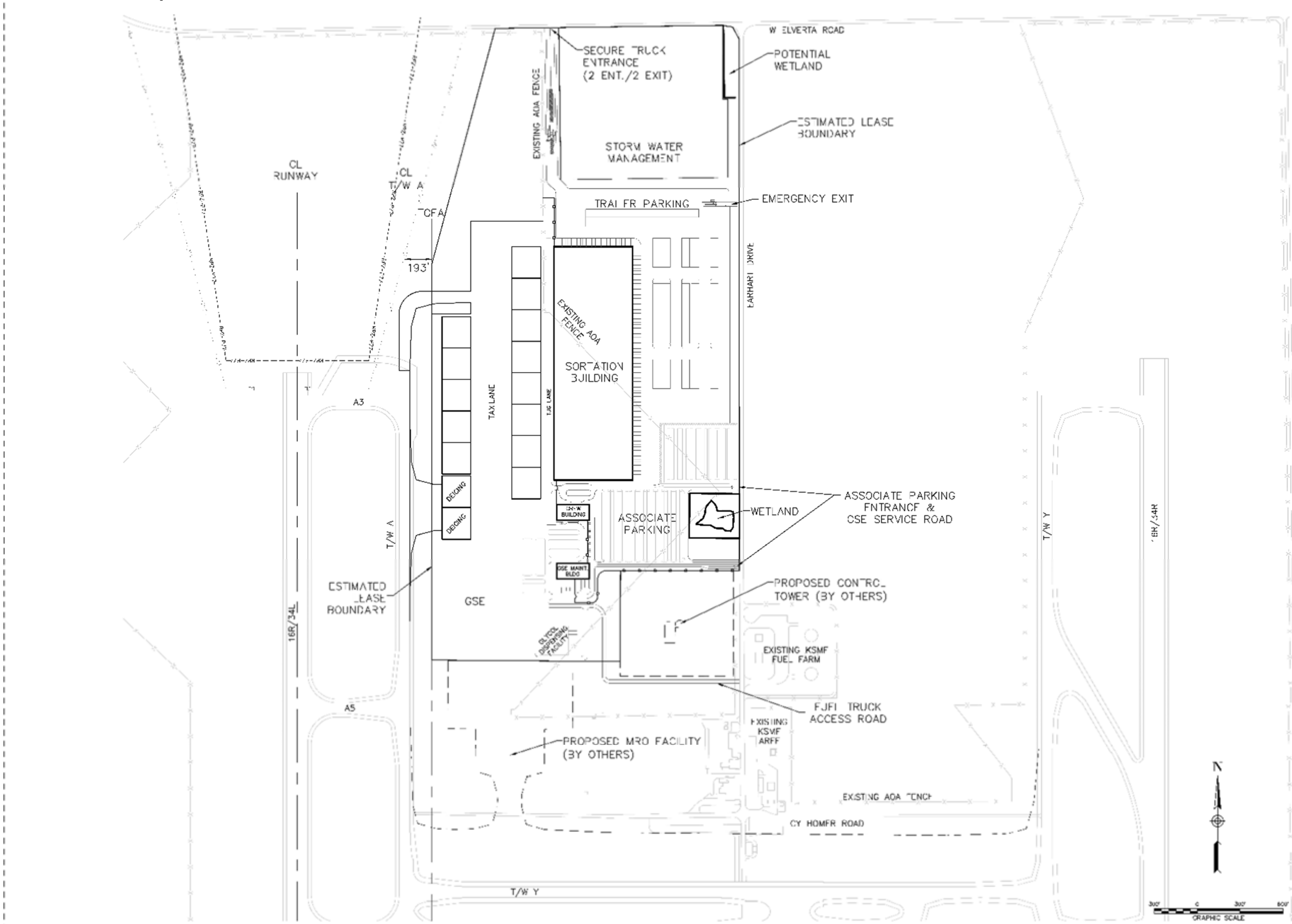


Source: Google Maps, 2020

Exhibit 2: Project Vicinity Map

Source: Google Maps, 2020

Exhibit 3: Conceptual Site Plan



Source: Gresham Smith, 2019

2 ENVIRONMENTAL SETTING

2.1 Greenhouse Gases and Climate Change

Certain gases in the earth's atmosphere classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

The primary GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Examples of fluorinated gases include chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3); however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of GHGs exceeding natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the Earth's climate, known as global climate change or global warming.

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs), which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of a GHG molecule is dependent on multiple variables and cannot be pinpointed, more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms of carbon sequestration. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere[2]. **Table 2: Description of Greenhouse Gases** describes the primary GHGs attributed to global climate change, including their physical properties.

[2] Intergovernmental Panel on Climate Change, *Carbon and Other Biogeochemical Cycles. In: Climate Change 2013: The Physical Science Basis*, *Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2013. http://www.climatechange2013.org/ images/report/WG1AR5_ALL_FINAL.pdf.

Table 2: Description of Greenhouse Gases

Greenhouse Gas	Description
Carbon Dioxide (CO_2)	CO_2 is a colorless, odorless gas that is emitted naturally and through human activities. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, and industrial facilities. The atmospheric lifetime of CO_2 is variable because it is readily exchanged in the atmosphere. CO_2 is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining Global Warming Potentials for other GHGs.
Nitrous Oxide (N_2O)	N_2O is largely attributable to agricultural practices and soil management. Primary human-related sources of N_2O include agricultural soil management, sewage treatment, combustion of fossil fuels, and adipic and nitric acid production. N_2O is produced from biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years. The Global Warming Potential of N_2O is 298.
Methane (CH_4)	CH_4, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. Methane is the major component of natural gas, about 87 percent by volume. Human-related sources include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. Natural sources of CH_4 include wetlands, gas hydrates, termites, oceans, freshwater bodies, non-wetland soils, and wildfires. The atmospheric lifetime of CH_4 is about 12 years and the Global Warming Potential is 25.
Hydrofluorocarbons (HFCs)	HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is increasing, as the continued phase out of CFCs and HCFCs gains momentum. The 100-year Global Warming Potential of HFCs range from 124 for HFC-152 to 14,800 for HFC-23.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Global Warming Potentials range from 6,500 to 9,200.
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987. Global Warming Potentials for CFCs range from 3,800 to 14,400.
Sulfur Hexafluoride (SF_6)	SF_6 is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas. The Global Warming Potential of SF_6 is 23,900.
Hydrochlorofluorocarbons (HCFCs)	HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, HCFCs are subject to a consumption cap and gradual phase out. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The 100-year Global Warming Potentials of HCFCs range from 90 for HCFC-123 to 1,800 for HCFC-142b.
Nitrogen Trifluoride (NF_3)	NF_3 was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. This gas is used in electronics manufacture for semiconductors and liquid crystal displays. It has a high global warming potential of 17,200.

Source: Compiled from U.S. EPA, *Overview of Greenhouse Gases*, April 11, 2018 (https://www.epa.gov/ghgemissions/overview-greenhouse-gases); U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016*, 2018; Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis*, 2007; National Research Council, Advancing the Science of Climate Change, 2010; U.S. EPA, *Methane and Nitrous Oxide Emission from Natural Sources*, April 2010.

3 REGULATORY SETTING

3.1 Federal

To date, national standards have not been established for nationwide GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level. Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (December 2007), among other key measures, requires the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

U.S. Environmental Protection Agency Endangerment Finding

The U.S. Environmental Protection Agency (EPA) authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Federal Clean Air Act (FCAA) and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, the EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing FCAA and the EPA's assessment of the scientific evidence that form the basis for the EPA's regulatory actions.

Federal Vehicle Standards

In response to the U.S. Supreme Court ruling discussed above, Executive Order 13432 was issued in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, an Executive Memorandum was issued directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking. On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks. It should be noted that the U.S. EPA is currently proposing to freeze the vehicle fuel efficiency standards at their planned 2020 level (37 mpg), canceling any future strengthening (currently 54.5 mpg by 2026).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6 to 23 percent over the 2010 baselines.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion metric tons and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program.

In 2018, the President and the U.S. EPA stated their intent to halt various federal regulatory activities to reduce GHG emission, including the phase two program. California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives. On September 27, 2019, the U.S. EPA and the NHTSA published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program." (84 Fed. Reg. 51,310 (Sept. 27, 2019.) The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. On March 31, 2020, the U.S. EPA and NHTSA finalized rulemaking for SAFE Part Two sets CO_2 emissions standards and corporate average fuel economy (CAFE) standards for passenger vehicles and light duty trucks, covering model years 2021-2026.

Presidential Executive Order 13783

Presidential Executive Order 13783, *Promoting Energy Independence and Economic Growth* issued on March 28, 2017, orders all federal agencies to apply cost-benefit analyses to regulations of GHG emissions and evaluations of the social cost of CO_2, N_2O, and CH_4.

3.2 State of California

California Air Resources Board

The California Air Resources Board (CARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness about climate change and its potential for severe long-term adverse environmental, social, and economic effects. California is a significant emitter of CO_2 equivalents (CO_2e) in the world and produced 459 million gross metric tons of CO_2e in 2013. In the State, the transportation sector is the largest emitter of GHGs, followed by industrial operations such as manufacturing and oil and gas extraction.

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation, such as the landmark Assembly Bill (AB) 32, *California Global Warming Solutions Act of 2006*, was specifically enacted to address GHG emissions. Other legislation, such as Title 24 building efficiency standards and Title 20 appliance energy standards, were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

AB 32 instructs the CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. AB 32 also directed CARB to set a GHG emissions limit based on 1990 levels, to be achieved by 2020. It set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

California Air Resource Board Scoping Plan

CARB adopted the Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that would be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emissions level would require a reduction of GHG emissions of approximately 29 percent below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business-as-usual")[3]. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates early actions and additional GHG reduction measures by both CARB and the State's Climate Action Team, identifies additional measures to be pursued as regulations, and outlines the adopted role of a cap-and-trade program[4]. Additional development of these measures and adoption of the appropriate regulations occurred through the end of 2013. Key elements of the Scoping Plan include:

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[3] CARB defines business-as-usual (BAU) in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004.

[4] The Climate Action Team, led by the secretary of the California Environmental Protection Agency, is a group of State agency secretaries and heads of agencies, boards, and departments. Team members work to coordinate statewide efforts to implement global warming emissions reduction programs and the State's Climate Adaptation Strategy.

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards.
- Achieving a statewide renewables energy mix of 33 percent by 2020.
- Developing a California cap-and-trade program that links with other programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions (adopted in 2011).
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets (several sustainable community strategies have been adopted).
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, heavy-duty truck measures, the Low Carbon Fuel Standard (amendments to the Pavley Standard adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (adopted 2009).
- Creating targeted fees, including a public goods charge on water use, fees on gasses with high global warming potential, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

In 2012, CARB released revised estimates of the expected 2020 emissions reductions. The revised analysis relied on emissions projections updated in light of current economic forecasts that accounted for the economic downturn since 2008, reduction measures already approved and put in place relating to future fuel and energy demand, and other factors. This update reduced the projected 2020 emissions from 596 million metric tons of CO_2e ($MMTCO_2e$) to 545 $MMTCO_2e$. The reduction in forecasted 2020 emissions means that the revised business-as-usual reduction necessary to achieve AB 32's goal of reaching 1990 levels by 2020 is now 21.7 percent, down from 29 percent. CARB also provided a lower 2020 inventory forecast that incorporated State-led GHG emissions reduction measures already in place. When this lower forecast is considered, the necessary reduction from business-as-usual needed to achieve the goals of AB 32 is approximately 16 percent.

CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan summarizes the most recent science related to climate change, including anticipated impacts to California and the levels of GHG emissions reductions necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet the 2020 target established by AB 32.

In 2016, the Legislature passed Senate Bill (SB) 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. With SB 32, the Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017 CARB adopted a second update to the Scoping Plan[5]. The 2017 Scoping Plan details how the State will reduce GHG emissions to meet the 2030 target set by Executive Order B-30-15 and codified by SB 32. Other objectives listed in the 2017 Scoping plan are to provide direct GHG emissions reductions; support climate investment in disadvantaged communities; and, support the Clean Power Plan and other Federal actions.

[5] California Air Resources Board, *California's 2017 Climate Change Scoping Plan,* https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed May 9, 2018.

Senate Bill 32 (California Global Warming Solutions Act of 2006: Emissions Limit)

Signed into law in September 2016, SB 32 codifies the 2030 GHG reduction target in Executive Order B-30-15 (40 percent below 1990 levels by 2030). The bill authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030. CARB also must adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG reductions.

SB 375 (The Sustainable Communities and Climate Protection Act of 2008)

Signed into law on September 30, 2008, SB 375 provides a process to coordinate land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction goals established by AB 32. SB 375 requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, aligns planning for transportation and housing, and creates specified incentives for the implementation of the strategies.

AB 1493 (Pavley Regulations and Fuel Efficiency Standards)

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011. The regulations establish one set of emission standards for model years 2009–2016 and a second set of emissions standards for model years 2017 to 2025. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer CO_2e emissions and 75 percent fewer smog-forming emissions.

SB 1368 (Emission Performance Standards)

SB 1368 is the companion bill of AB 32, which directs the California Public Utilities Commission (CPUC) to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 limits carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. The new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. The CPUC adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, for 1,100 pounds of CO_2 per megawatt-hour.

SB 1078 and SBX1-2 (Renewable Electricity Standards)

SB 1078 requires California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Executive Order S-21-09 also directed CARB to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. SBX1-2, which codified the 33 percent by 2020 goal.

SB 350 (Clean Energy and Pollution Reduction Act of 2015)

Signed into law on October 7, 2015, SB 350 implements the goals of Executive Order B-30-15. The objectives of SB 350 are to increase the procurement of electricity from renewable sources from 33 percent to 50 percent (with interim targets of 40 percent by 2024, and 25 percent by 2027) and to double the energy efficiency savings in electricity and natural gas end uses of retail customers through energy efficiency and conservation. SB 350 also reorganizes the Independent System Operator to develop more regional electricity transmission markets and improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.

AB 398 (Market-Based Compliance Mechanisms)

Signed on July 25, 2017, AB 398 extended the duration of the Cap-and-Trade program from 2020 to 2030. AB 398 required CARB to update the Scoping Plan and for all GHG rules and regulations adopted by the State. It also designated CARB as the statewide regulatory body responsible for ensuring that California meets its statewide carbon pollution reduction targets, while retaining local air districts' responsibility and authority to curb toxic air contaminants and criteria pollutants from local sources that severely impact public health. AB 398 also decreased free carbon allowances over 40 percent by 2030 and prioritized Cap-and-Trade spending to various programs including reducing diesel emissions in impacted communities.

SB 150 (Regional Transportation Plans)

Signed on October 10, 2017, SB 150 aligns local and regional GHG reduction targets with State targets (i.e. 40 percent below their 1990 levels by 2030). SB 150 creates a process to include communities in discussions on how to monitor their regions' progress on meeting these goals. The bill also requires the CARB to regularly report on that progress, as well as on the successes and the challenges regions experience associated with achieving their targets. SB 150 provides for accounting of climate change efforts and GHG reductions and identify effective reduction strategies.

SB 100 (California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases)

Signed into Law in September 2018, SB 100 increased California's renewable electricity portfolio from 50 to 60 percent by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

Executive Orders Related to GHG Emissions

California's Executive Branch has taken several actions to reduce GHGs using executive orders. Although not regulatory, they set the tone for the State and guide the actions of state agencies.

Executive Order S-3-05

Executive Order S-3-05 was issued on June 1, 2005, which established the following GHG emissions reduction targets:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.

- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order S-01-07

Issued on January 18, 2007, Executive Order S 01-07 mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. The executive order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. CARB adopted the LCFS on April 23, 2009.

Executive Order S-13-08

Issued on November 14, 2008, Executive Order S-13-08 facilitated the California Natural Resources Agency development of the 2009 California Climate Adaptation Strategy. Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order S-14-08

Issued on November 17, 2008, Executive Order S-14-08 expands the State's Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, Executive Order S-21-09 (signed on September 15, 2009) directs CARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. CARB adopted the Renewable Electricity Standard on September 23, 2010, which requires 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

Executive Order S-21-09

Issued on July 17, 2009, Executive Order S-21-09 directs CARB to adopt regulations to increase California's RPS to 33 percent by 2020. This builds upon SB 1078 (2002), which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006), which advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II.

Executive Order B-30-15

Issued on April 29, 2015, Executive Order B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of CO_2e (MMTCO2e). The 2030 target acts as an interim goal on the way to achieving reductions of 80 percent below 1990 levels by 2050, a goal set by Executive Order S-3-05. The executive order also requires the State's climate adaptation plan to be updated every three years and for the State to continue its climate change research program, among other provisions. With the enactment of SB 32 in 2016, the Legislature codified the goal of reducing GHG emissions by 2030 to 40 percent below 1990 levels.

Executive Order B-55-18

Issued on September 10, 2018, Executive Order B-55-18 establishes a goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing GHG emissions. The executive order requires CARB to work with relevant state agencies to develop a framework for implementing this goal. It also requires CARB to update the Scoping Plan to identify and recommend measures to achieve carbon neutrality. The executive order also requires state agencies to develop sequestration targets in the Natural and Working Lands Climate Change Implementation Plan.

Executive Order N-79-20

Signed in September 2020, Executive Order N-79-20 establishes as a goal that where feasible, all new passenger cars and trucks, as well as all drayage/cargo trucks and off-road vehicles and equipment, sold in California, will be zero-emission by 2035. The executive order sets a similar goal requiring that all medium and heavy-duty vehicles will be zero-emission by 2045 where feasible. It also directs CARB to develop and propose rulemaking for passenger vehicles and trucks, medium-and heavy-duty fleets where feasible, drayage trucks, and off-road vehicles and equipment "requiring increasing volumes" of new zero emission vehicles (ZEVs) "towards the target of 100 percent." The executive order directs the California Environmental Protection Agency, the California Geologic Energy Management Division (CalGEM), and the California Natural Resources Agency to transition and repurpose oil production facilities with a goal toward meeting carbon neutrality by 2045. Executive Order N-79-20 builds upon the CARB Advanced Clean Trucks regulation, which was adopted by CARB in July 2020.

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 Appliance Efficiency Regulations

The appliance efficiency regulations (California Code of Regulations [CCR] Title 20, Sections 1601-1608) include standards for new appliances. Twenty-three categories of appliances are included in the scope of these regulations. These standards include minimum levels of operating efficiency, and other cost-effective measures, to promote the use of energy- and water-efficient appliances.

Title 24 Building Energy Efficiency Standards

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR Title 24, Part 6), was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2016 Building Energy Efficiency Standards approved on January 19, 2016 went into effect on January 1, 2017. The 2019 Building Energy Efficiency Standards were adopted on May 9, 2018 and take effect on January 1, 2020. Under the 2019 standards, homes will use about 53 percent less energy and nonresidential buildings will use about 30 percent less energy than buildings under the 2016 standards.

Title 24 California Green Building Standards Code

The California Green Building Standards Code (CCR Title 24, Part 11 code) commonly referred to as the CALGreen Code, is a statewide mandatory construction code developed and adopted by the California Building Standards Commission and the Department of Housing and Community Development. The CALGreen standards require new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency/conservation, material conservation and resource efficiency, and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt that encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code went into effect January 1, 2017. Updates to the 2016 CALGreen Code will take effect on January 1, 2020 (2019 CALGreen). The 2019 CALGreen standards will continue to improve upon the existing standards for new construction of, and additions and alterations to, residential and nonresidential buildings.

3.3 Regional

Sacramento Metropolitan Air Quality Management District Thresholds

The Sacramento Metropolitan Air Quality Management District (SMAQMD) covers all of Sacramento County, including the cities of Sacramento, Citrus Heights, Folsom, Rancho Cordova, Elk Grove, Galt, Isleton, and unincorporated Sacramento County. Under the California Environmental Quality Act (CEQA) review process for proposed projects, SMAQMD may serve as the lead agency, a responsible agency with limited discretionary authority, or a reviewing agency providing comment on the air quality impacts of a proposed project or plan. CEQA requires that lead agencies identify significant environmental impacts, including impacts from greenhouse gas (GHG) emissions, and to avoid or mitigate those impacts if feasible. To assist lead agencies in determining significance, in October 2014 SMAQMD adopted the current GHG thresholds of significance which include a construction threshold (1,100 metric tons GHG/year), a land use operational threshold (1,100 metric tons GHG/year), and a stationary source operational threshold (10,000 metric tons GHG/year).

Sacramento Metropolitan Transportation Plan/Sustainable Communities Strategy

The Sacramento Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) supports the Sacramento Region Blueprint and links land use, air quality, and transportation needs. As the state and federally designated MPO for the region, SACOG is responsible for developing the MTP/SCS in coordination with Sacramento, Yolo, Yuba, Sutter, El Dorado, and Placer counties.

The most recent version of the MTP/SCS was adopted in November 2019 and covers the period from 2020 to 2040. The 2020 MTP/SCS is a multimodal transportation plan that is required to be financially feasible, achieve health standards for clean air, and address statewide climate goals. It is guided by four priority policy areas: build vibrant places for today's and tomorrow's residents; foster the next generation of mobility solutions; modernize the way we pay for transportation infrastructure; and build and maintain a safe, reliable, and multimodal transportation system. The MTP/SCS includes a regional growth forecast and projected land use pattern (residential and employment) to accommodate estimated increases in population, employment, and housing. It also reports on historical VMT data, observed VMT trends, and forecasted VMT through 2040.[6] Data from the 2020 MTP/SCS is used to establish Sacramento County's share of future transportation emissions for new developments, as described later in this report.

3.4 Local

County of Sacramento Climate Action Plan

The County of Sacramento adopted its Government Operations Climate Action Plan (CAP) in 2012, which addresses GHG emissions from the County's operations including County-owned facilities, vehicles, equipment, and employee commute. It identified an action plan to reduce County government GHG emissions to a level 15 percent below baseline 2005 levels by 2020.[7] The County's goals related to transportation and energy use include the following:

- Increase the average fuel efficiency of County-owned vehicles powered by gasoline and diesel and encourage increased fuel efficiency in community vehicles;
- Increase the use of alternative and lower carbon fuels in the County vehicle fleet and facilitate their use in the community;
- Reduce total vehicle miles traveled per capita in the community and region;
- Improve energy efficiency of existing and new buildings in unincorporated County;
- Improve energy efficiency of County infrastructure operation (roads, water, waste, buildings, etc.); and
- Decrease use of fossil fuels by transitioning to renewable energy sources.

The County is currently developing a Communitywide Greenhouse Gas Reduction and Climate Change Adaptation Plan (Communitywide CAP), which will update the government operations GHG inventory and CAP measures, update the unincorporated County's GHG inventory and forecasts, identify GHG reduction targets for 2020, and propose measures to achieve the required GHG reductions for the entire County. It will also conduct a climate change vulnerability assessment and develop an adaptation strategy. So far, a memorandum documenting the existing and projected Business-as-Usual emissions inventories has been released.[8]

Sacramento Area Council of Governments Sustainable Communities Strategy

In April 2012, Sacramento Area Council of Governments (SACOG), the designated Metropolitan Planning Organization (MPO) for the Sacramento region, adopted a Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) (SACOG 2012). Building on prior plans including the Blueprint Growth Strategy discussed below and the 2008 MTP, the SCS accommodates future growth through a more compact land use pattern largely within the region's current development footprint, emphasizes operational improvements over new roadway capacity Projects, and reflects other factors that have tended to reduce motor vehicle use. The SCS demonstrates that, if implemented, the region will achieve

[6] SACOG, *Metropolitan Transportation Plan/Sustainable Communities Strategy*, November 2019. Available online at: https://www.sacog.org/2020-metropolitan-transportation-plansustainable-communities-strategyupdate. Accessed: June 2020.

[7] Sacramento County, *Climate Action Plan: County Government Operations*, June 2012.

[8] Sacramento County, *Planning and Environmental Review: Communitywide Greenhouse Gas Reduction and Climate Change Adaptation (Communitywide CAP)* Project, 2019.

a 9 percent per capita GHG reduction in passenger vehicle emissions in 2020 and a 16 percent reduction in 2035. These reductions meet the targets for SACOG of 7 percent and 16 percent per capita GHG reduction from 2005 for the years 2020 and 2035, respectively, established by CARB. In June 2012, CARB issued an Acceptance of GHG Quantification Determination for the SACOG SCS, indicating that CARB concurs with SACOG's quantification of GHG emission reductions from the final MTP/SCS and its determination that the SCS would achieve the 2020 and 2035 targets established by CARB.

Sacramento County General Plan

The Sacramento County General Plan has goals and policies to improve air quality through transportation infrastructure. Since there are limited Project-relevant policies specific to air quality, related policies are mentioned in this section. Where inconsistencies exist, if any, they are addressed in the respective impact analysis below. The Sacramento County General Plan policies that directly address reducing and avoiding natural resources impacts include the following:

Goal LU-115. I: It is the goal of the County to reduce greenhouse gas emissions to 1990 levels by the year 2020. This shall be achieved through a mix of State and local action.

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

4.1 CEQA Thresholds and Significance Criteria

Based upon the criteria derived from Appendix G of the CEQA Guidelines, a project normally would have a significant effect on the environment if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Addressing GHG emissions generation impacts requires an agency to determine what constitutes a significant impact. The amendments to the CEQA Guidelines specifically allow lead agencies to determine thresholds of significance that illustrate the extent of an impact and are a basis from which to apply mitigation measures. This means that each agency is left to determine whether a project's GHG emissions will have a "significant" impact on the environment. The guidelines direct that agencies are to use "careful judgment" and "make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" the project's GHG emissions.[9]

Sacramento Metropolitan Air Quality Management Thresholds

SMAQMD's currently adopted GHG thresholds of significance consist of a construction threshold (1,100 metric tons GHG/year), a land-use operational threshold (1,100 metric tons GHG/year) and a stationary source operational threshold (10,000 metric tons GHG/year).[10]

SMAQMD updated its CEQA GHG thresholds of significance, to assist lead agencies in determining significance for proposed projects through 2030 and beyond for Sacramento County in April 2020, in response to recent changes in legislation (e.g., SB 32) and CARB's adoption of the 2017 Scoping Plan Update, which recommends communities establish per-capita emissions targets that support the State's climate stabilization goal.[11] The SMAQMD's recommendations reiterate that if a project is subject to CEQA review and the proponent demonstrates the project is consistent with all applicable measures from an adopted CAP or GHG reduction plan that meets the requirements of CEQA Guidelines Section 15183.5, the proponent would qualify for CEQA streamlining of GHG analysis.

The SMAQMD recommended Best Management Practices (BMPs) for new developments. There are two tiers of BMPs: Tier 1: Required for all projects to avoid conflicting with long-term State goals, and Tier 2: Required for projects that do not screen out of further requirements (e.g., large or inefficient projects).
Tier 1: BMPs Required for all Projects

- BMP 1: No natural gas: Projects shall be designed and constructed without natural gas infrastructure.

[9] 14 California Code of Regulations, Section 15064.4a
[10] Sacramento Metropolitan Air Quality Management District, *Greenhouse Gas Thresholds for Sacramento County,* 2020.
[11] Ibid.

- BMP 2: Electric vehicle ready: Projects shall meet the current CalGreen Tier 2 standards, except all EV Capable spaces shall instead by EV Ready

Tier 2: BMP Required for Large or Inefficient Projects

BMP 3: As described in more detail in Section 4.3.1, residential projects shall achieve a 15 percent reduction in VMT per resident, and office projects should achieve a 15 percent reduction in VMT per worker compared to existing average VMT per capita for the county, or for the city if a more local SB 743 target has been established. Retail projects should achieve no net increase in total VMT, as required to show consistency with SB 743. These reductions can be achieved by many strategies, such as:

- Locate in an area that already has low VMT due to location, transit service, etc.
- Adopt CAPCOA measures
- Adopt measures noted in Sacramento's CAP checklist
- Join a Transportation Management Association
- Incorporate traffic calming measures
- Incorporate pedestrian facilities and connections to public transportation
- Promote electric bicycle or other micro-mobility options

Quantification methodology for these strategies is described in the SMAQMD Recommended Guidance for Land Use Emission Reductions guidance.[12] Projects that are located in areas with existing VMT per capita above the county or city average VMT per capita shall also provide sufficient electrical capacity (e.g., transmission lines and substation sites) such that 100 percent of project vehicles have the potential to be zero-emission vehicles in future years.[13] In addition to the BMPs, projects need to show consistency with the 2045 statewide carbon neutrality target.

County of Sacramento Transportation Analysis Guidelines

The *County of Sacramento Transportation Analysis Guidelines* (September 10, 2020) (County CEQA VMT Guidelines) provides methodologies for transportation engineers and planners to conduct CEQA transportation analyses for land development and transportation projects in compliance with SB 743. According to the County CEQA VMT Guidelines, the County's CEQA VMT threshold for Industrial uses is 16.4 VMT per employee and no net increase for Regional Public Facility uses.

4.2 Methodology

The project's construction and operational emissions were calculated using the California Emissions Estimator Model version 2016.3.2 (CalEEMod). Details of the modeling assumptions and emission factors are provided in **Appendix A: Greenhouse Gas Emissions Data**. For construction, CalEEMod calculates emissions from off-road equipment usage and on-road vehicle travel associated with haul, delivery, and construction worker trips. GHG emissions during construction were forecasted based on the proposed construction schedule and applying the mobile-source and fugitive dust emissions factors derived from CalEEMod. The project's construction-related GHG emissions would be generated from off-road

[12] Sacramento Metropolitan Air Quality Management District, Recommended Guidance for Land Use Emission Reductions. Available at: http://www.airquality.org/businesses/ceqa-land-use-planning/mitigation. Accessed: June 2020.

[13] Projects in areas with below-average VMT per capita tend to be urban or infill locations with limited parking facilities where additional electrical capacity may be infeasible, but also where public or fast charging are likely to be targeted nearby by programs such as the VW fund.

construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. The project's operations-related GHG emissions would be generated by vehicular traffic, area sources (e.g., landscaping maintenance, consumer products), electrical generation, water supply and wastewater treatment, and solid waste.

Project-generated increases in operational emissions would be predominantly associated with motor vehicle use. The increase of traffic over existing conditions as a result of the Project was obtained from the Project's VMT Assessment and Local Access, Safety, and Circulation Study prepared by Kimley-Horn (July 2020). Other operational emissions from area, energy, and stationary sources were quantified in CalEEMod based on land use and stationary source activity data. **Table 3: CalEEMod Land Use and Trip Generation** summarizes the land use and vehicle trip data modeled for the Cargo Facility and the Airport Master Plan Update.

Table 3: CalEEMod Land Use and Trip Generation

Land Use Type	Size (Thousand Square Feet)	Lot Acreage	Daily Trip Rate	Total Daily Trips
Cargo Facility				
Cargo Facility (Unrefrigerated Warehouse)	950	21.81	9.8	9,310
Parking, Ramp, and Taxi Lane (Parking Lot/Other Non-Asphalt [Concrete] Surfaces)	2,434.57	55.89	0	0
Total	**3,384.568**	**77.70**	**N/A**	**9,310**
Airport Master Plan Update				
Concourse Expansion	267.73	6.15	27.92	7,475
Consolidated Rental Car Facility	2,252.50	10.30	0	0
Expansion of Commercial Area/Airside Commercial Development (Industrial/Warehouse)	3,908.23	329.59	1.68	6,566
Total	**6,428.46**	**346.04**	**N/A**	**14,041**

It should be noted that CalEEMod emission factors incorporate compliance with some, but not all, applicable rules and regulations regarding energy efficiency and vehicle fuel efficiency, and other GHG reduction policies, as described in the CalEEMod User's Guide (November 2017). CalEEMod energy inputs were adjusted to be consistent with the most current version of the California Title 24, Part 6 Building Energy Efficiency Standards. The natural gas use was adjusted to comply with BMP-1 (i.e., no natural gas use). Mobile source emissions rates in CalEEMod have been updated with CARB SAFE Rule adjustment factors and EMFAC2017 emission rates consistent with the methodology described in Section 5.2 *Methodology for Converting EMFAC2014 Emission Rates into CalEEMod Vehicle Emission Factors* of *Appendix A: Calculation Details for CalEEMod* in the *CalEEMod User Guide.* Additionally, CO_2 intensity adjusted per Table A-8 in the SMAQMD's document Greenhouse Gas Thresholds for Sacramento County (2020).

5 POTENTIAL IMPACTS AND MITIGATION

5.1 Greenhouse Gas Emissions

Threshold 5.1 Would the Project generate GHG emissions, either directly or indirectly, that could have a significant impact on the environment?

Short-Term Construction Greenhouse Gas Emissions

The Project would result in direct emissions of GHGs from construction. The approximate quantity of daily GHG emissions generated by construction equipment utilized to build the Project is depicted in **Table 4: Construction-Related Greenhouse Gas Emissions**.

Table 4: Construction-Related Greenhouse Gas Emissions

Category	$MTCO_2e$
Construction Year 1	755
Construction Year 2	1,457
Total Construction Emissions	2,212
30-Year Amortized Construction	74

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

Table 3 shows that the Project would result in the generation of approximately 2,212 $MTCO_2e$ over the course of construction. The SMAQMD Guide to Air Quality Assessment in Sacramento County allows for construction emissions to be amortized over the expected (long-term) operational life of a project. The amortized Project construction emissions would be 74 $MTCO_2e$ per year. Once construction is complete, the generation of these GHG emissions would cease.

Long-Term Operational Greenhouse Gas Emissions

Operational or long-term emissions occur over the life of the Project. GHG emissions would result from direct emissions such as Project generated vehicular traffic and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power, the energy required to convey water to, and wastewater from the Project, the emissions associated with solid waste generated from the Project, and any fugitive refrigerants from air conditioning or refrigerators. Total GHG emissions associated with the Project are summarized in **Table 5: Cargo Facility Project Greenhouse Gas Emissions**.

Table 5: Project Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year[1]
Unmitigated	
Area	0.03
Energy	818
Mobile	20,606
Waste	449
Water	306
Amortized Construction Emissions	74
Total Annual Project GHG Emissions - Unmitigated	**22,253**
Mitigated[2]	
Area	0.03
Energy	807
Mobile	20,392
Waste	225
Water	245
Amortized Construction Emissions	74
Total Annual Project GHG Emissions – Mitigated[2]	**21,743**

Notes:
1. Total values are from CalEEMod and may not add up 100% due to rounding.
2. Operational emissions include reductions from implementation of Mitigation Measures AQ-6 through AQ-8 from the *SMF Cargo Facility Project and Master Plan Update Air Quality Assessment*, Kimley-Horn, January 2021.

Source: CalEEMod version 2016.3.2. Refer to Appendix A for model outputs.

As shown in **Table 5**, the Project's unmitigated GHG emissions would be approximately 22,253 $MTCO_2e$/year, while the Project's mitigated GHG emissions would be approximately and 21,743 $MTCO_2e$/year from both construction and operations. It is noted the mitigated emissions in **Table 5** include the implementation of the SMAQMD Tier 1, BMP 1 (no natural gas) and BMP 2 (electric vehicle ready), as well as Mitigation Measures AQ-6 through AQ-8 from the *SMF Cargo Facility Project and Master Plan Update Air Quality Assessment* (Kimley-Horn, January 2021) to reduce long-term mobile emissions during operations at the proposed Cargo Facility. Mitigation Measure AQ-6 requires the use of model year 2010 trucks or newer and the Project applicant to provide electrical hookups, electric vehicle charging stations, and/or infrastructure (e.g., conduit and panel space) to support the future installation of truck charging stations for future zero-emission heavy-duty vehicles. Mitigation measure AQ-7 requires a Transportation Demand Management (TDM) program to facilitate the use of alternative transportation, public transit, and ridesharing as well as reduce single occupancy vehicle use by employees. Mitigation Measure AQ-8 requires the Project applicant to join and maintain a membership in the Metro Airpark Transportation Management Association (TMA) or North Natomas TMA to encourage and enhance non-single occupant vehicle use to the airport and/or in the North Natomas area. It is also noted that Mitigation Measures AQ-7 and AQ-8 are consistent with SMAQMD Tier 2, BMP 3 (i.e., Join a Transportation Management Association, and Promote electric bicycle or other micro-mobility options).

Table 5 shows that the majority of operational emissions would be from mobile sources. As noted in the VMT Assessment (prepared by Kimley-Horn, July 2020), while the Cargo Facility is expected to provide additional jobs and some related trips to the surrounding area, the facility itself is not expected to be the principal catalyst for new vehicle trips. Rather, it is anticipated that these trips would occur regardless of whether this location were developed as it is in response to an existing demand for goods. Accordingly, if this site were not developed, a similar site will be developed elsewhere to meet this demand and, as such, the alternative to this development would likely not eliminate related trips. Similarly, while the proposed Cargo Facility is expected to add trips to the region due to the increase in employment, the expected heavy vehicle trips, like passenger service, are not in response to the provision of the facility. Specifically, the demand for the goods carried by the heavy-vehicle trucks would exist irrespective of the construction of this facility.

Total Emissions with Airport Master Plan Update

The SMF Master Plan Update involves airport expansion to accommodate growth over the next 20 years. The proposed SMF Master Plan Update consists of an approximately 267,730 sf of concourse/terminal expansion, construction of a five-story parking structure, and up to approximately 330 acres of commercial/industrial uses (approximately 3,908,260 sf of building area). Currently, more than 2.1 million domestic passengers and more than 1.6 million international passengers travel to airports outside of the Sacramento region to take flights.[14] Primarily, these passengers use airports in the Bay Area with San Francisco International Airport (SFO), Oakland International Airport (OAK), and San Jose International Airport (SJC) capturing the majority of the passenger service. Accordingly, if the Airport does not expand and/or provide additional passenger service that meets the need of traveler, these longer vehicular trips to Bay Area airports would be assumed to continue or even expand as the demand for service naturally increases with population growth over time. The provision of additional gates to serve this unmet local demand is a primary catalyst of the SMF Master Plan Update. Estimates for future air travel prepared by the Airport currently assume that half of the anticipated growth over the next 20 years will result from recapturing passengers from these Bay Area airports. The reduction in VMT due to recapturing passengers would also reduce mobile source GHG emissions in the region.

The total emissions associated with the SMF Master Plan update are shown in **Table 6: Total GHG Emissions with Master Plan Update**. It is noted the SMF Master Plan Update emissions in **Table 6** include reductions from implementation of Tier 1 and Tier 2 BMPs in compliance with the SMAQMD *Greenhouse Gas Thresholds for Sacramento County* (2020). As indicated in **Table 6**, the total SMF Master Plan Update emissions would be approximately 18,202 $MTCO_2e$/year which would exceed the SMAQMD threshold of 1,100 $MTCO_2e$/year.[15] In addition, the total net GHG emissions from the proposed Cargo Facility, SMF Master Plan Update, and VMT emissions reductions from the SMF Master Plan Update would result in an increase of 5,827 $MTCO_2e$/year. Thus, Mitigation Measure GHG-1 would be required for the SMF Master Plan Update to reduce long-term GHG emissions to the extent feasible.

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[14] Campbell-Hill Aviation Group, LLC., *SMF Catchment Area Analysis,* April 2020 and Kimley-Horn, VMT Assessment & Local Access, Safety, and Circulation Study, July 2020.

[15] The SMAQMD nor County of Sacramento have GHG thresholds for master plan projects such as the SMF Master Plan Update. Therefore, the SMAQMD de minimis threshold of 1,100 $MTCO_2e$/year is utilized for informational purposes.

Table 6: Total GHG Emissions with Master Plan Update

Source	$MTCO_2e$ per Year
SMF Master Plan Update Emissions – Construction	195[1]
SMF Master Plan Update Emissions – Operational	18,202[1,2]
Total SMF Master Plan Update Emissions (Construction + Operations)	*18,397*[1,2]
Total Annual Cargo Facility GHG Emissions – Mitigated	*21,743*[3]
SMF Master Plan Update VMT Emissions Reduction	*-34,313*[4]
Total Net Emissions	**5,827**

Notes:
1. Emissions calculated using CalEEMod version 2016.3.2. See Appendix A for model outputs.
2. Includes emissions reductions from implementation of Tier 1 and Tier 2 BMPs from the SMAQMD *Greenhouse Gas Thresholds for Sacramento County* (2020) document.
3. Cargo Facility emissions results are provided in **Table 5** above.
4. Emissions calculated with CARB's EMFAC2017 model and based on a VMT reduction of 486,941 vehicle miles per day calculated in the VMT Assessment. See Appendix A for model outputs.

Mitigation Measure GHG-1 requires the SMF Master Plan Update to comply with Tier 1 and Tier 2 BMPs from the SMAQMD' *Greenhouse Gas Thresholds for Sacramento County* (2020) document, and to implement applicable County CAP checklist measures when they become available in the future. Since Mitigation Measure GHG-1 cannot be applied in its entirety until a future unknown date and its effects are not currently quantifiable, GHG emissions impacts from the SMF Master Plan Update are considered significant and unavoidable.

Mitigation Measures:

GHG-1 Prior to approval of future development projects under the SMF Master Plan Update, the Airport shall demonstrate compliance with SMAQMD Tier 1 BMPs (Required for all Projects) and Tier 2 BMPs (Required for Large or Inefficient Projects) for new developments to the County. At the time of this writing, the Sacramento County Climate Action Plan (CAP) and CAP Checklist have not been adopted. However, once the CAP and Checklist is adopted, future SMF Master Plan Development projects shall demonstrate consistency with and adopt applicable Checklist measures.

- Also, refer to Mitigation Measures AQ-7 and AQ-8 in the *SMF Cargo Facility Project and Master Plan Update Air Quality Assessment* (Kimley-Horn, 2021).

Level of Significance: Significant and unavoidable impact.

5.2 Greenhouse Gas Reduction Plan Compliance

Threshold 5.2	**Would the Project conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions?**

Sacramento County Climate Action Plan

In 2012, the County of Sacramento adopted its Government Operations Climate Action Plan (CAP). The CAP provides additional guidance for the County's ongoing efforts to reduce GHG emissions. The CAP contains policies/goals related to agriculture, energy, transportation/land use, waste, and water.

Goals in the section on energy focus on increasing energy efficiency and increasing the usage of renewable sources. Actions include implementing green building ordinances and programs, community outreach, renewable energy policies, and partnerships with local energy producers.

Goals in the section on transportation/land use cover a wide range of topics but are principally related to reductions in vehicle miles traveled, usage of alternative fuel types, and increases in vehicle efficiency. Actions include programs to increase the efficiency of the County vehicle fleet, and an emphasis on mixed use and higher density development, implementation of technologies and planning strategies that improve nonvehicular mobility

Consistent with mitigation included in the EIR for the Sacramento County General Plan, publication of a "Phase II" CAP is anticipated to occur within five years of the adoption of the 2030 Sacramento County General Plan (the General Plan was adopted in November 2011). This second phase CAP is intended to flesh out the strategies involved in the strategy and framework CAP, and will include economic analysis, intensive vetting with all internal departments, community outreach/information sharing, timelines, and detailed performance measures. The County is currently preparing this second phase CAP and is projected to be complete in fall of 2021.

The proposed Project would help implement the goals set forth in the CAP improving energy efficiency of existing and new buildings within the County as well as improving energy efficiency of the County's infrastructure operations.

California Air Resource Board Scoping Plan Consistency

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (CO_2, CH_4, NO_X, HFCs, PFCs, and SF_6) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, CARB adopted the *Climate Change Scoping Plan* (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan provides a range of GHG reduction actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as the cap-and-trade program, and an AB 32 implementation fee to fund the program. As shown in **Table 7: Project Consistency with Applicable CARB Scoping Plan Measures**, the Project is consistent with most of the strategies, while others are not applicable to the Project.

The 2017 Scoping Plan Update identifies additional GHG reduction measures necessary to achieve the 2030 target. These measures build upon those identified in the first update to the Scoping Plan in 2013. Although a number of these measures are currently established as policies and measures, some measures have not yet been formally proposed or adopted. It is expected that these actions to reduce GHG emissions will be adopted as required to achieve statewide GHG emissions targets. As such, impacts related to consistency with the Scoping Plan would be less than significant.

Table 7: Project Consistency with Applicable CARB Scoping Plan Measures

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Transportation	California Cap-and-Trade Program Linked to Western Climate Initiative	Regulation for the California Cap on GHG Emissions and Market-Based Compliance Mechanism October 20, 2015 (CCR 95800)	**Consistent.** The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers. However, the regulation indirectly affects people who use the products and services produced by these industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period.
	California Light-Duty Vehicle GHG Standards	Pavley I 2005 Regulations to Control GHG Emissions from Motor Vehicles Pavley I 2005 Regulations to Control GHG Emissions from Motor Vehicles	**Consistent**. This measure applies to all new vehicles starting with model year 2012. The Project would not conflict with its implementation as it would apply to all new passenger vehicles purchased in California. Passenger vehicles, model year 2012 and later, associated with construction and operation of the Project would be required to comply with the Pavley emissions standards.
		2012 LEV III California GHG and Criteria Pollutant Exhaust and Evaporative Emission Standards	**Consistent.** The LEV III amendments provide reductions from new vehicles sold in California between 2017 and 2025. Passenger vehicles associated with the site would comply with LEV III standards.
	Low Carbon Fuel Standard	2009 readopted in 2015. Regulations to Achieve GHG Emission Reductions Subarticle 7. Low Carbon Fuel Standard CCR 95480	**Consistent.** This measure applies to transportation fuels utilized by vehicles in California. The Project would not conflict with implementation of this measure. Motor vehicles associated with construction and operation of the Project would utilize low carbon transportation fuels as required under this measure.
	Regional Transportation-Related GHG Targets.	SB 375. Cal. Public Resources Code §§ 21155, 21155.1, 21155.2, 21159.28	**Consistent**. The Project would provide development in the region that is consistent with the growth projections in the MTP/SCS.
	Goods Movement	Goods Movement Action Plan January 2007	**Not applicable**. The Project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
	Medium/Heavy-Duty Vehicle	2010 Amendments to the Truck and Bus Regulation, the Drayage Truck Regulation and the	**Consistent**. This measure applies to medium and heavy-duty vehicles that operate in the state. The Project would not conflict with implementation of this measure. Medium and heavy-duty vehicles associated with construction and operation of the Project would

Table 7: Project Consistency with Applicable CARB Scoping Plan Measures

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
		Tractor-Trailer GHG Regulation	be required to comply with the requirements of this regulation.
	High Speed Rail	Funded under SB 862	**Not applicable**. This is a statewide measure that cannot be implemented by a project applicant or Lead Agency.
Electricity and Natural Gas	Energy Efficiency	Title 20 Appliance Efficiency Regulation Title 24 Part 6 Energy Efficiency Standards for Residential and Non-Residential Building Title 24 Part 11 California Green Building Code Standards	**Consistent.** The Project would not conflict with implementation of this measure. The Project would comply with the latest energy efficiency standards.
	Renewable Portfolio Standard/Renewable Electricity Standard.	2010 Regulation to Implement the Renewable Electricity Standard (33% 2020)	**Consistent**. The Project would obtain electricity from the electric utility, Sacramento Municipal Utility District (SMUD). SMUD obtained 31 percent of its power supply from renewable sources in 2018. Therefore, the utility would provide power when needed on site that is composed of a greater percentage of renewable sources.
	Million Solar Roofs Program	SB 350 Clean Energy and Pollution Reduction Act of 2015 (50% 2030)	
	Million Solar Roofs Program	Tax Incentive Program	**Consistent.** This measure is to increase solar throughout California, which is being done by various electricity providers and existing solar programs. The program provides incentives that are in place at the time of construction.
Water	Water	Title 24 Part 11 California Green Building Code Standards SBX 7-7—The Water Conservation Act of 2009 Model Water Efficient Landscape Ordinance	**Consistent.** The Project would comply with the CalGreen standards, which requires a 20 percent reduction in indoor water use.
Green Buildings	Green Building Strategy	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The State is to increase the use of green building practices. The Project would implement required green building strategies through existing regulation that requires the Project to comply with various CalGreen requirements. The Project includes sustainability design features that support the Green Building Strategy.
Industry	Industrial Emissions	2010 CARB Mandatory Reporting Regulation	**Not applicable.** The Mandatory Reporting Regulation requires facilities and entities with more than 10,000 $MTCO_2e$ of combustion and process emissions, all facilities belonging to certain industries, and all electric power entities to submit an annual GHG emissions data report directly to CARB. As shown above, mobile source emissions make up the majority of emissions and Project stationary source GHG emissions would not exceed 10,000 $MTCO_2e$. Therefore, this regulation would not apply.

Table 7: Project Consistency with Applicable CARB Scoping Plan Measures

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Recycling and Waste Management	Recycling and Waste	Title 24 Part 11 California Green Building Code Standards AB 341 Statewide 75 Percent Diversion Goal	**Consistent.** The Project would not conflict with implementation of these measures. The Project is required to achieve the recycling mandates via compliance with the CALGreen code. The County has consistently achieved its state recycling mandates.
Forests	Sustainable Forests	Cap and Trade Offset Projects	**Not applicable.** The Project is in an area designated for urban uses. No forested lands exist on-site.
High Global Warming Potential	High Global Warming Potential Gases	CARB Refrigerant Management Program CCR 95380	**Not applicable**. The regulations are applicable to refrigerants used by large air conditioning systems and large commercial and industrial refrigerators and cold storage system. The Project would not conflict with the refrigerant management regulations adopted by CARB.
Agriculture	Agriculture	Cap and Trade Offset Projects for Livestock and Rice Cultivation	**Not applicable**. The Project site is designated for urban development. No grazing, feedlot, or other agricultural activities that generate manure occur currently exist on-site or are proposed to be implemented by the Project.

Source: California Air Resources Board, *California's 2017 Climate Change Scoping Plan*, November 2017 and CARB, *Climate Change Scoping Plan*, December 2008.

The Project is estimated to result in a net increase of approximately 5,827 $MTCO_2e$ per year with implementation of the Master Plan Update and Cargo Facility, see **Table 5**. Mitigation Measure GHG-1 would be required for the SMF Master Plan Update to reduce long-term GHG emissions to the extent feasible. However, as discussed above, despite implementation of Mitigation Measure GHG-1 impacts would remain significant and unavoidable.

Regarding goals for 2050 under Executive Order S-3-05, at this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not yet been developed; nevertheless, it can be anticipated that operation of the proposed Project would benefit from the implementation of current and potential future regulations (e.g., improvements in vehicle emissions, SB 100/renewable electricity portfolio improvements, etc.) enacted to meet an 80 percent reduction below 1990 levels by 2050.

The proposed Project demonstrates consistency with the Sacramento County CAP and Scoping Plan goals, and would not conflict with any applicable plan, policy, or regulation of an agency adopted to reduce GHG emissions, including Title 24, AB 32, and SB 32.

VMT Guidelines Consistency

As discussed in the *Assessment & Local Access, Safety, and Circulation Study* (Kimley-Horn, July 2020), the average VMT per employee for the SMF Master Plan Update and the proposed Cargo Facility is 20.52 and 22.59 vehicle miles, respectively. Per the County's CEQA VMT Guidelines, the VMT threshold for Industrial uses is 16.4 VMT per employee and no net increase for Regional Public Facility uses. Thus, the SMF Master Plan Update and Cargo Facility would exceed the County's allowable VMT and would conflict with the SB 743 targets for Tier 2 BMPs in the SMAQMD's *Greenhouse Gas Thresholds for Sacramento County* (2020). Therefore, the Project has the potential to conflict with the State's GHG emissions reduction efforts and a significant and unavoidable impact would occur.

Mitigation Measures: Refer to Mitigation Measure GHG-1 above, and Mitigation Measures AQ-7 and AQ-8 in the *SMF Cargo Facility Project and Master Plan Update Air Quality Assessment* (Kimley-Horn, 2021).

Level of Significance: Significant and unavoidable impact.

5.3 Cumulative Impacts

Cumulative Setting

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have much longer atmospheric lifetimes of 1 year to several thousand years that allow them to be dispersed around the globe.

Cumulative Impacts

It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of project-related GHGs would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the Project as well as other cumulative related projects would also be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As discussed above, the Project would result in significant and unavoidable impacts related to GHG emissions and GHG plan consistency. Therefore, the Project’s cumulative contribution of GHG emissions would be significant and the Project’s cumulative GHG impacts would also be cumulatively considerable.

Mitigation Measures: Refer to Mitigation Measure GHG-1 above, and Mitigation Measures AQ-7 and AQ-8 in the *SMF Cargo Facility Project and Master Plan Update Air Quality Assessment* (Kimley-Horn, 2021).

Level of Significance: Significant and unavoidable impact.

6 REFERENCES

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Appendix A

Greenhouse Gas Emissions Data

SMF Cargo Facility

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	950.00	1000sqft	21.81	950,000.00	0
Other Non-Asphalt Surfaces	41.89	Acre	41.89	1,824,728.40	0
Parking Lot	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr)	343	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted per SMAQMD GHG threshold guidance

Land Use - Cargo Sort facility 900 KSF, 25 KSF ground crew bldg, 25 KSF maintenance bldg, parking/ramp footprint 14 acres (KSMF DD - 31OCT19-900sqft-V1 draft.xlsx)

Construction Phase - 16 month construction duration

Grading -

Vehicle Trips - trip rate: 9,310 daily trips / 950 (ksf)= 9.8 trip length and % based on traffic data provided, reduced trip length by 6.3% to account for 24 days of no operation.

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - Fugitive dust control

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - CEC - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Fleet Mix - based on traffic study

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	60.00	30.00
tblConstructionPhase	NumDays	155.00	75.00
tblConstructionPhase	NumDays	1,550.00	146.00
tblConstructionPhase	NumDays	110.00	88.00
tblConstructionPhase	NumDays	110.00	88.00

tblEnergyUse	LightingElect	0.00	0.35
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	T24NG	0.49	0.00
tblFleetMix	HHD	0.02	0.03
tblFleetMix	LDA	0.56	0.58
tblFleetMix	LHD2	5.2450e-003	0.00
tblFleetMix	MH	8.6500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0310e-003	0.00
tblFleetMix	SBUS	6.1900e-004	0.00
tblFleetMix	UBUS	2.0540e-003	0.00
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.18
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	48.11
tblVehicleEF	HHD	1.02	0.46
tblVehicleEF	HHD	3.28	1.8300e-003
tblVehicleEF	HHD	4,159.31	9,153.87
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	22.32	53.94
tblVehicleEF	HHD	3.36	3.68
tblVehicleEF	HHD	19.79	2.45
tblVehicleEF	HHD	0.04	0.05
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04

tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.05
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.63	3.57
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.72	4.09
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.57	0.19
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.10	0.00

tblVehicleEF	HHD	1.77	47.02
tblVehicleEF	HHD	1.03	0.46
tblVehicleEF	HHD	3.02	1.6860e-003
tblVehicleEF	HHD	4,406.18	9,138.56
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	23.04	52.70
tblVehicleEF	HHD	3.15	3.45
tblVehicleEF	HHD	19.77	2.45
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.59	3.73
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.4500e-004	6.7700e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.68	4.27
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.4500e-004	6.7700e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.65	0.17
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	HHD	3.34	49.62
tblVehicleEF	HHD	1.01	0.46
tblVehicleEF	HHD	3.67	2.0290e-003
tblVehicleEF	HHD	3,818.40	9,175.02
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	21.33	55.66
tblVehicleEF	HHD	3.43	3.75
tblVehicleEF	HHD	19.81	2.45
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.04	0.06

tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.3000e-005	1.3000e-005
tblVehicleEF	HHD	5.5610e-003	1.0700e-004
tblVehicleEF	HHD	0.68	3.35
tblVehicleEF	HHD	1.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.5200e-004	0.00
tblVehicleEF	HHD	4.3000e-005	1.3000e-005
tblVehicleEF	HHD	5.5610e-003	1.0700e-004
tblVehicleEF	HHD	0.78	3.83
tblVehicleEF	HHD	1.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.9700e-004	6.8200e-004
tblVehicleEF	HHD	0.11	1.0000e-006
tblVehicleEF	LDA	4.2860e-003	2.5680e-003
tblVehicleEF	LDA	5.8650e-003	0.06
tblVehicleEF	LDA	0.61	0.70
tblVehicleEF	LDA	1.26	2.30
tblVehicleEF	LDA	252.52	260.95
tblVehicleEF	LDA	57.68	54.60

tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
tblVehicleEF	LDA	5.9800e-004	5.4000e-004
tblVehicleEF	LDA	0.04	0.32
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
tblVehicleEF	LDA	5.0150e-003	3.0340e-003
tblVehicleEF	LDA	4.7840e-003	0.05
tblVehicleEF	LDA	0.78	0.89
tblVehicleEF	LDA	1.03	1.90
tblVehicleEF	LDA	280.47	289.33
tblVehicleEF	LDA	57.68	53.81
tblVehicleEF	LDA	0.05	0.04

tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
tblVehicleEF	LDA	5.9400e-004	5.3200e-004
tblVehicleEF	LDA	0.11	0.82
tblVehicleEF	LDA	0.13	0.15
tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.0630e-003	2.3890e-003
tblVehicleEF	LDA	7.0460e-003	0.07
tblVehicleEF	LDA	0.58	0.66
tblVehicleEF	LDA	1.57	2.88
tblVehicleEF	LDA	245.02	253.39
tblVehicleEF	LDA	57.68	55.70
tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23

tblVehicleEF	LDA	1.7730e-003	1.5160e-003
tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
tblVehicleEF	LDA	2.4540e-003	2.5070e-003
tblVehicleEF	LDA	6.0400e-004	5.5100e-004
tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
tblVehicleEF	LDT1	0.01	5.4680e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10
tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
tblVehicleEF	LDT1	3.1540e-003	3.0560e-003
tblVehicleEF	LDT1	7.7500e-004	6.5100e-004
tblVehicleEF	LDT1	0.16	0.71
tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.44
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.25	0.45
tblVehicleEF	LDT1	0.01	6.3980e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.70	1.51
tblVehicleEF	LDT1	2.71	2.06
tblVehicleEF	LDT1	346.93	337.97
tblVehicleEF	LDT1	71.71	64.83
tblVehicleEF	LDT1	0.12	0.09
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003

tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	3.4910e-003	3.3440e-003
tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
tblVehicleEF	LDT1	4.17	3.15
tblVehicleEF	LDT1	304.87	301.05
tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003

tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10

tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15

tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07

tblVehicleEF	LHD1	2.48	0.91
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tblVehicleEF	LHD1	9.9400e-004	0.01
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tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
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tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
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tblVehicleEF	LHD1	0.14	0.10

tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
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tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
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tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09

tblVehicleEF	LHD1	0.02	0.29
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tblVehicleEF	LHD1	0.30	0.08
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tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
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tblVehicleEF	LHD2	8.8820e-003	8.3040e-003
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tblVehicleEF	LHD2	720.74	795.82
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tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
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tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
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tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
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tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6800e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	0.01	8.7180e-003
tblVehicleEF	LHD2	8.3620e-003	7.8270e-003

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tblVehicleEF	LHD2	0.74	0.82
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tblVehicleEF	LHD2	14.25	194.40
tblVehicleEF	LHD2	720.74	795.84
tblVehicleEF	LHD2	24.40	6.74
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tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	3.3510e-003	0.05
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.01	0.22
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tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
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tblVehicleEF	LHD2	3.3510e-003	0.05

tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.14	0.16
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	3.6020e-003	0.04
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tblVehicleEF	LHD2	9.5090e-003	8.8700e-003
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tblVehicleEF	LHD2	24.40	6.92
tblVehicleEF	LHD2	0.11	1.55
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tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04

tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0110e-003	7.6850e-003
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tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003

tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78

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tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
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tblVehicleEF	MCY	3.4870e-003	3.0200e-003
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tblVehicleEF	MCY	0.95	0.94

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tblVehicleEF	MCY	2.52	2.52
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tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
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tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03

tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66

tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
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tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
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tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09

tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07

tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
tblVehicleEF	MH	1.69	1.73
tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08

tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.16	0.11
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
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tblVehicleEF	MHD	0.06	5.3430e-003
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tblVehicleEF	MHD	3.8380e-003	0.03
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tblVehicleEF	MHD	7.7800e-004	6.1000e-005

tblVehicleEF	MHD	3.6720e-003	0.03
tblVehicleEF	MHD	0.01	0.04
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tblVehicleEF	MHD	0.04	0.28
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
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tblVehicleEF	MHD	0.40	0.03
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tblVehicleEF	MHD	0.01	0.01
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tblVehicleEF	MHD	0.05	0.36
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
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tblVehicleEF	MHD	0.02	0.04
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tblVehicleEF	MHD	0.05	5.0400e-003
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tblVehicleEF	MHD	156.25	1,453.84

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tblVehicleEF	MHD	11.19	1.47
tblVehicleEF	MHD	3.2360e-003	0.02
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tblVehicleEF	MHD	3.0960e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
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tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.37	0.03
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
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tblVehicleEF	MHD	3.9020e-003	0.02
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tblVehicleEF	MHD	0.04	0.35
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07

tblVehicleEF	MHD	0.41	0.03
tblVehicleEF	MHD	0.02	0.04
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tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	4.4680e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
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tblVehicleEF	MHD	0.04	0.29
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	1.3050e-003	0.01

tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	5.3000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
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tblVehicleEF	MHD	0.05	0.38
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
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tblVehicleEF	MHD	0.03	0.08
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tblVehicleEF	OBUS	2.2060e-003	0.03
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tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
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tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
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tblVehicleEF	UBUS	0.01	0.03
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tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
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tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
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tblVehicleEF	UBUS	0.06	2.9520e-003
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tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004

tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CNW_TL	6.50	85.86
tblVehicleTrips	CNW_TTP	41.00	3.33
tblVehicleTrips	CW_TL	10.00	14.02
tblVehicleTrips	CW_TTP	59.00	96.67
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.68	9.80

tblVehicleTrips	SU_TR	1.68	9.80
tblVehicleTrips	WD_TR	1.68	9.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4022	4.0169	2.9317	8.2600e-003	0.8712	0.1361	1.0073	0.3584	0.1258	0.4842	0.0000	751.8051	751.8051	0.1173	0.0000	754.7369
2022	5.2844	4.4525	4.4207	0.0157	0.8289	0.0837	0.9126	0.2245	0.0785	0.3029	0.0000	1,454.7321	1,454.7321	0.1109	0.0000	1,457.5037
Maximum	**5.2844**	**4.4525**	**4.4207**	**0.0157**	**0.8712**	**0.1361**	**1.0073**	**0.3584**	**0.1258**	**0.4842**	**0.0000**	**1,454.7321**	**1,454.7321**	**0.1173**	**0.0000**	**1,457.5037**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4022	4.0169	2.9317	8.2600e-003	0.4870	0.1361	0.6231	0.1803	0.1258	0.3060	0.0000	751.8048	751.8048	0.1173	0.0000	754.7366
2022	5.2844	4.4525	4.4207	0.0157	0.7669	0.0837	0.8506	0.2093	0.0785	0.2877	0.0000	1,454.7319	1,454.7319	0.1109	0.0000	1,457.5034
Maximum	**5.2844**	**4.4525**	**4.4207**	**0.0157**	**0.7669**	**0.1361**	**0.8506**	**0.2093**	**0.1258**	**0.3060**	**0.0000**	**1,454.7319**	**1,454.7319**	**0.1173**	**0.0000**	**1,457.5034**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**26.24**	**0.00**	**23.24**	**33.18**	**0.00**	**24.57**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2021	8-31-2021	1.4929	1.4929
2	9-1-2021	11-30-2021	1.9307	1.9307
3	12-1-2021	2-28-2022	2.6648	2.6648
4	3-1-2022	5-31-2022	2.6357	2.6357
5	6-1-2022	8-31-2022	4.0643	4.0643
6	9-1-2022	9-30-2022	1.3253	1.3253
		Highest	4.0643	4.0643

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	812.4656	812.4656	0.0687	0.0142	818.4181
Mobile	7.7504	21.0325	72.2865	0.2215	20.5379	0.1913	20.7292	5.4718	0.1795	5.6513	0.0000	20,590.0784	20,590.0784	0.6520	0.0000	20,606.3783
Waste						0.0000	0.0000		0.0000	0.0000	181.2709	0.0000	181.2709	10.7128	0.0000	449.0911
Water						0.0000	0.0000		0.0000	0.0000	77.7258	170.3026	248.0284	0.2819	0.1720	306.3346
Total	**12.0934**	**21.0326**	**72.2994**	**0.2215**	**20.5379**	**0.1913**	**20.7293**	**5.4718**	**0.1796**	**5.6513**	**258.9967**	**21,572.8715**	**21,831.8682**	**11.7155**	**0.1862**	**22,180.2487**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	800.9369	800.9369	0.0677	0.0140	806.8050
Mobile	7.7292	20.8884	71.6587	0.2192	20.3107	0.1893	20.5000	5.4112	0.1777	5.5889	0.0000	20,375.9909	20,375.9909	0.6474	0.0000	20,392.1769
Waste						0.0000	0.0000		0.0000	0.0000	90.6355	0.0000	90.6355	5.3564	0.0000	224.5455
Water						0.0000	0.0000		0.0000	0.0000	62.1806	136.2421	198.4227	0.2255	0.1376	245.0677
Total	**12.0722**	**20.8885**	**71.6716**	**0.2192**	**20.3107**	**0.1894**	**20.5000**	**5.4112**	**0.1777**	**5.5890**	**152.8161**	**21,313.1949**	**21,466.0109**	**6.2972**	**0.1516**	**21,668.6217**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.17**	**0.69**	**0.87**	**1.04**	**1.11**	**1.02**	**1.11**	**1.11**	**1.02**	**1.10**	**41.00**	**1.20**	**1.68**	**46.25**	**18.58**	**2.31**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/14/2021	5	10	
2	Site Preparation	Site Preparation	6/15/2021	7/26/2021	5	30	
3	Grading	Grading	7/27/2021	11/8/2021	5	75	
4	Building Construction	Building Construction	11/9/2021	5/31/2022	5	146	
5	Paving	Paving	6/1/2022	9/30/2022	5	88	
6	Architectural Coating	Architectural Coating	6/1/2022	9/30/2022	5	88	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 55.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,425,000; Non-Residential Outdoor: 475,000; Striped Parking Area: 146,074 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,422.00	555.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	284.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2100e-003**	**7.2100e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.7000e-004	1.9000e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4714	0.4714	1.0000e-005	0.0000	0.4717
Total	**2.6000e-004**	**1.7000e-004**	**1.9000e-003**	**1.0000e-005**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4714**	**0.4714**	**1.0000e-005**	**0.0000**	**0.4717**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2100e-003**	**7.2100e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.7000e-004	1.9000e-003	1.0000e-005	5.1000e-004	0.0000	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4714	0.4714	1.0000e-005	0.0000	0.4717
Total	**2.6000e-004**	**1.7000e-004**	**1.9000e-003**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4714**	**0.4714**	**1.0000e-005**	**0.0000**	**0.4717**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1536	50.1536	0.0162	0.0000	50.5591
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.2710**	**0.0307**	**0.3017**	**0.1490**	**0.0282**	**0.1772**	**0.0000**	**50.1536**	**50.1536**	**0.0162**	**0.0000**	**50.5591**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	6.1000e-004	6.8300e-003	2.0000e-005	1.9800e-003	1.0000e-005	2.0000e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6972	1.6972	4.0000e-005	0.0000	1.6983
Total	**9.3000e-004**	**6.1000e-004**	**6.8300e-003**	**2.0000e-005**	**1.9800e-003**	**1.0000e-005**	**2.0000e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.6972**	**1.6972**	**4.0000e-005**	**0.0000**	**1.6983**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1057	0.0000	0.1057	0.0581	0.0000	0.0581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1535	50.1535	0.0162	0.0000	50.5590
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.1057**	**0.0307**	**0.1364**	**0.0581**	**0.0282**	**0.0863**	**0.0000**	**50.1535**	**50.1535**	**0.0162**	**0.0000**	**50.5590**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	6.1000e-004	6.8300e-003	2.0000e-005	1.8300e-003	1.0000e-005	1.8400e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.6972	1.6972	4.0000e-005	0.0000	1.6983
Total	**9.3000e-004**	**6.1000e-004**	**6.8300e-003**	**2.0000e-005**	**1.8300e-003**	**1.0000e-005**	**1.8400e-003**	**4.9000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.6972**	**1.6972**	**4.0000e-005**	**0.0000**	**1.6983**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1572	1.7400	1.1579	2.3300e-003		0.0745	0.0745		0.0685	0.0685	0.0000	204.3562	204.3562	0.0661	0.0000	206.0085
Total	**0.1572**	**1.7400**	**1.1579**	**2.3300e-003**	**0.3253**	**0.0745**	**0.3997**	**0.1349**	**0.0685**	**0.2034**	**0.0000**	**204.3562**	**204.3562**	**0.0661**	**0.0000**	**206.0085**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-003	1.7000e-003	0.0190	5.0000e-005	5.5100e-003	4.0000e-005	5.5500e-003	1.4700e-003	4.0000e-005	1.5000e-003	0.0000	4.7143	4.7143	1.2000e-004	0.0000	4.7174
Total	**2.6000e-003**	**1.7000e-003**	**0.0190**	**5.0000e-005**	**5.5100e-003**	**4.0000e-005**	**5.5500e-003**	**1.4700e-003**	**4.0000e-005**	**1.5000e-003**	**0.0000**	**4.7143**	**4.7143**	**1.2000e-004**	**0.0000**	**4.7174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1269	0.0000	0.1269	0.0526	0.0000	0.0526	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1572	1.7400	1.1579	2.3300e-003		0.0745	0.0745		0.0685	0.0685	0.0000	204.3559	204.3559	0.0661	0.0000	206.0083
Total	**0.1572**	**1.7400**	**1.1579**	**2.3300e-003**	**0.1269**	**0.0745**	**0.2013**	**0.0526**	**0.0685**	**0.1211**	**0.0000**	**204.3559**	**204.3559**	**0.0661**	**0.0000**	**206.0083**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-003	1.7000e-003	0.0190	5.0000e-005	5.0800e-003	4.0000e-005	5.1200e-003	1.3600e-003	4.0000e-005	1.4000e-003	0.0000	4.7143	4.7143	1.2000e-004	0.0000	4.7174
Total	**2.6000e-003**	**1.7000e-003**	**0.0190**	**5.0000e-005**	**5.0800e-003**	**4.0000e-005**	**5.1200e-003**	**1.3600e-003**	**4.0000e-005**	**1.4000e-003**	**0.0000**	**4.7143**	**4.7143**	**1.2000e-004**	**0.0000**	**4.7174**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3399	0.3232	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	45.1693	45.1693	0.0109	0.0000	45.4417
Total	**0.0371**	**0.3399**	**0.3232**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**45.1693**	**45.1693**	**0.0109**	**0.0000**	**45.4417**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.1071	0.2959	2.6400e-003	0.0633	3.0600e-003	0.0663	0.0183	2.9300e-003	0.0212	0.0000	253.9441	253.9441	0.0145	0.0000	254.3071
Worker	0.0960	0.0628	0.7018	1.9300e-003	0.2037	1.4200e-003	0.2051	0.0542	1.3100e-003	0.0555	0.0000	174.2987	174.2987	4.5800e-003	0.0000	174.4131
Total	**0.1301**	**1.1699**	**0.9977**	**4.5700e-003**	**0.2669**	**4.4800e-003**	**0.2714**	**0.0725**	**4.2400e-003**	**0.0767**	**0.0000**	**428.2428**	**428.2428**	**0.0191**	**0.0000**	**428.7202**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3399	0.3232	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	45.1692	45.1692	0.0109	0.0000	45.4417
Total	**0.0371**	**0.3399**	**0.3232**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**45.1692**	**45.1692**	**0.0109**	**0.0000**	**45.4417**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.1071	0.2959	2.6400e-003	0.0593	3.0600e-003	0.0623	0.0173	2.9300e-003	0.0202	0.0000	253.9441	253.9441	0.0145	0.0000	254.3071
Worker	0.0960	0.0628	0.7018	1.9300e-003	0.1878	1.4200e-003	0.1892	0.0503	1.3100e-003	0.0516	0.0000	174.2987	174.2987	4.5800e-003	0.0000	174.4131
Total	**0.1301**	**1.1699**	**0.9977**	**4.5700e-003**	**0.2471**	**4.4800e-003**	**0.2515**	**0.0676**	**4.2400e-003**	**0.0718**	**0.0000**	**428.2428**	**428.2428**	**0.0191**	**0.0000**	**428.7202**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0913	0.8354	0.8754	1.4400e-003		0.0433	0.0433		0.0407	0.0407	0.0000	123.9730	123.9730	0.0297	0.0000	124.7155
Total	**0.0913**	**0.8354**	**0.8754**	**1.4400e-003**		**0.0433**	**0.0433**		**0.0407**	**0.0407**	**0.0000**	**123.9730**	**123.9730**	**0.0297**	**0.0000**	**124.7155**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0867	2.8840	0.7485	7.1800e-003	0.1736	7.3600e-003	0.1809	0.0502	7.0400e-003	0.0572	0.0000	690.5942	690.5942	0.0387	0.0000	691.5617
Worker	0.2462	0.1548	1.7694	5.1000e-003	0.5587	3.8000e-003	0.5625	0.1486	3.5100e-003	0.1521	0.0000	461.0755	461.0755	0.0113	0.0000	461.3575
Total	**0.3329**	**3.0388**	**2.5179**	**0.0123**	**0.7323**	**0.0112**	**0.7435**	**0.1988**	**0.0106**	**0.2093**	**0.0000**	**1,151.6698**	**1,151.6698**	**0.0500**	**0.0000**	**1,152.9192**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0913	0.8354	0.8754	1.4400e-003		0.0433	0.0433		0.0407	0.0407	0.0000	123.9729	123.9729	0.0297	0.0000	124.7154
Total	**0.0913**	**0.8354**	**0.8754**	**1.4400e-003**		**0.0433**	**0.0433**		**0.0407**	**0.0407**	**0.0000**	**123.9729**	**123.9729**	**0.0297**	**0.0000**	**124.7154**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0867	2.8840	0.7485	7.1800e-003	0.1626	7.3600e-003	0.1699	0.0475	7.0400e-003	0.0545	0.0000	690.5942	690.5942	0.0387	0.0000	691.5617
Worker	0.2462	0.1548	1.7694	5.1000e-003	0.5153	3.8000e-003	0.5191	0.1379	3.5100e-003	0.1414	0.0000	461.0755	461.0755	0.0113	0.0000	461.3575
Total	**0.3329**	**3.0388**	**2.5179**	**0.0123**	**0.6778**	**0.0112**	**0.6890**	**0.1854**	**0.0106**	**0.1959**	**0.0000**	**1,151.6698**	**1,151.6698**	**0.0500**	**0.0000**	**1,152.9192**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.4895	0.6415	1.0000e-003		0.0250	0.0250		0.0230	0.0230	0.0000	88.1213	88.1213	0.0285	0.0000	88.8338
Paving	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0669**	**0.4895**	**0.6415**	**1.0000e-003**		**0.0250**	**0.0250**		**0.0230**	**0.0230**	**0.0000**	**88.1213**	**88.1213**	**0.0285**	**0.0000**	**88.8338**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	1.3400e-003	0.0154	4.0000e-005	4.8500e-003	3.0000e-005	4.8800e-003	1.2900e-003	3.0000e-005	1.3200e-003	0.0000	4.0000	4.0000	1.0000e-004	0.0000	4.0025
Total	**2.1400e-003**	**1.3400e-003**	**0.0154**	**4.0000e-005**	**4.8500e-003**	**3.0000e-005**	**4.8800e-003**	**1.2900e-003**	**3.0000e-005**	**1.3200e-003**	**0.0000**	**4.0000**	**4.0000**	**1.0000e-004**	**0.0000**	**4.0025**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.4895	0.6415	1.0000e-003		0.0250	0.0250		0.0230	0.0230	0.0000	88.1212	88.1212	0.0285	0.0000	88.8337
Paving	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0669**	**0.4895**	**0.6415**	**1.0000e-003**		**0.0250**	**0.0250**		**0.0230**	**0.0230**	**0.0000**	**88.1212**	**88.1212**	**0.0285**	**0.0000**	**88.8337**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	1.3400e-003	0.0154	4.0000e-005	4.4700e-003	3.0000e-005	4.5000e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	4.0000	4.0000	1.0000e-004	0.0000	4.0025
Total	**2.1400e-003**	**1.3400e-003**	**0.0154**	**4.0000e-005**	**4.4700e-003**	**3.0000e-005**	**4.5000e-003**	**1.2000e-003**	**3.0000e-005**	**1.2300e-003**	**0.0000**	**4.0000**	**4.0000**	**1.0000e-004**	**0.0000**	**4.0025**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-003	0.0620	0.0798	1.3000e-004		3.6000e-003	3.6000e-003		3.6000e-003	3.6000e-003	0.0000	11.2343	11.2343	7.3000e-004	0.0000	11.2526
Total	**4.7508**	**0.0620**	**0.0798**	**1.3000e-004**		**3.6000e-003**	**3.6000e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**11.2343**	**11.2343**	**7.3000e-004**	**0.0000**	**11.2526**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0254	0.2906	8.4000e-004	0.0918	6.2000e-004	0.0924	0.0244	5.8000e-004	0.0250	0.0000	75.7338	75.7338	1.8500e-003	0.0000	75.7801
Total	**0.0404**	**0.0254**	**0.2906**	**8.4000e-004**	**0.0918**	**6.2000e-004**	**0.0924**	**0.0244**	**5.8000e-004**	**0.0250**	**0.0000**	**75.7338**	**75.7338**	**1.8500e-003**	**0.0000**	**75.7801**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-003	0.0620	0.0798	1.3000e-004		3.6000e-003	3.6000e-003		3.6000e-003	3.6000e-003	0.0000	11.2343	11.2343	7.3000e-004	0.0000	11.2526
Total	**4.7508**	**0.0620**	**0.0798**	**1.3000e-004**		**3.6000e-003**	**3.6000e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**11.2343**	**11.2343**	**7.3000e-004**	**0.0000**	**11.2526**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0254	0.2906	8.4000e-004	0.0846	6.2000e-004	0.0853	0.0227	5.8000e-004	0.0232	0.0000	75.7338	75.7338	1.8500e-003	0.0000	75.7801
Total	**0.0404**	**0.0254**	**0.2906**	**8.4000e-004**	**0.0846**	**6.2000e-004**	**0.0853**	**0.0227**	**5.8000e-004**	**0.0232**	**0.0000**	**75.7338**	**75.7338**	**1.8500e-003**	**0.0000**	**75.7801**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.7292	20.8884	71.6587	0.2192	20.3107	0.1893	20.5000	5.4112	0.1777	5.5889	0.0000	20,375.9909	20,375.9909	0.6474	0.0000	20,392.1769
Unmitigated	7.7504	21.0325	72.2865	0.2215	20.5379	0.1913	20.7292	5.4718	0.1795	5.6513	0.0000	20,590.0784	20,590.0784	0.6520	0.0000	20,606.3783

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	9,310.00	9,310.00	9310.00	55,618,564	55,003,110
Total	9,310.00	9,310.00	9,310.00	55,618,564	55,003,110

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	14.02	0.00	85.86	96.67	0.00	3.33	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Parking Lot	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.578841	0.038733	0.206173	0.118029	0.019040	0.000000	0.000000	0.033300	0.000000	0.000000	0.005884	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	800.9369	800.9369	0.0677	0.0140	806.8050
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	812.4656	812.4656	0.0687	0.0142	818.4181
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	638655	99.3633	8.4000e-003	1.7400e-003	100.0913
Parking Lot	213444	33.2081	2.8100e-003	5.8000e-004	33.4514
Unrefrigerated Warehouse-No Rail	4.37e +006	679.8941	0.0575	0.0119	684.8754
Total		**812.4656**	**0.0687**	**0.0142**	**818.4181**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	638655	99.3633	8.4000e-003	1.7400e-003	100.0913
Parking Lot	213444	33.2081	2.8100e-003	5.8000e-004	33.4514
Unrefrigerated Warehouse-No Rail	4.2959e +006	668.3655	0.0565	0.0117	673.2623
Total		**800.9369**	**0.0677**	**0.0140**	**806.8050**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Unmitigated	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-003	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Total	**4.3430**	**1.2000e-004**	**0.0129**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0250**	**0.0250**	**7.0000e-005**	**0.0000**	**0.0266**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-003	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Total	**4.3430**	**1.2000e-004**	**0.0129**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0250**	**0.0250**	**7.0000e-005**	**0.0000**	**0.0266**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	198.4227	0.2255	0.1376	245.0677
Unmitigated	248.0284	0.2819	0.1720	306.3346

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	219.688 / 0	248.0284	0.2819	0.1720	306.3346
Total		**248.0284**	**0.2819**	**0.1720**	**306.3346**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	175.75 / 0	198.4227	0.2255	0.1376	245.0677
Total		**198.4227**	**0.2255**	**0.1376**	**245.0677**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	90.6355	5.3564	0.0000	224.5455
Unmitigated	181.2709	10.7128	0.0000	449.0911

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	893	181.2709	10.7128	0.0000	449.0911
Total		**181.2709**	**10.7128**	**0.0000**	**449.0911**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	446.5	90.6355	5.3564	0.0000	224.5455
Total		**90.6355**	**5.3564**	**0.0000**	**224.5455**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Cargo Facility - Mitigated
Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	950.00	1000sqft	21.81	950,000.00	0
Other Non-Asphalt Surfaces	41.89	Acre	41.89	1,824,728.40	0
Parking Lot	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.5 **Precipitation Freq (Days)** 58

Climate Zone 6 **Operational Year** 2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr) 343 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted per SMAQMD GHG threshold guidance

Land Use - Cargo Sort facility 900 KSF, 25 KSF ground crew bldg, 25 KSF maintenance bldg, parking/ramp footprint 14 acres (KSMF DD - 31OCT19-900sqft-V1 draft.xlsx)

Construction Phase - 16 month construction duration

Grading -

Vehicle Trips - trip rate: 9,310 daily trips / 950 (ksf)= 9.8 trip length and % based on traffic data provided, reduced trip length by 6.3% to account for 24 days of no operation.

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule, 2010 MY truck mitigation

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - Fugitive dust control

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - CEC - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Fleet Mix - based on traffic study

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	60.00	30.00
tblConstructionPhase	NumDays	155.00	75.00
tblConstructionPhase	NumDays	1,550.00	146.00
tblConstructionPhase	NumDays	110.00	88.00
tblConstructionPhase	NumDays	110.00	88.00

tblEnergyUse	LightingElect	0.00	0.35
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	T24NG	0.49	0.00
tblFleetMix	HHD	0.02	0.03
tblFleetMix	LDA	0.56	0.58
tblFleetMix	LHD2	5.2450e-003	0.00
tblFleetMix	MH	8.6500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0310e-003	0.00
tblFleetMix	SBUS	6.1900e-004	0.00
tblFleetMix	UBUS	2.0540e-003	0.00
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.22
tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	63.58
tblVehicleEF	HHD	1.02	0.37
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tblVehicleEF	HHD	1,651.06	1,442.00
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tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04

tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
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tblVehicleEF	HHD	7.2000e-005	1.0000e-006
tblVehicleEF	HHD	0.11	0.03
tblVehicleEF	HHD	8.2400e-004	8.0000e-006
tblVehicleEF	HHD	0.09	2.0000e-006
tblVehicleEF	HHD	0.04	0.10
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	3.0000e-006
tblVehicleEF	HHD	5.4300e-003	3.0000e-006
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tblVehicleEF	HHD	7.2000e-005	1.0000e-006
tblVehicleEF	HHD	0.20	0.07
tblVehicleEF	HHD	8.2400e-004	8.0000e-006
tblVehicleEF	HHD	0.10	2.0000e-006
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tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.10	0.00

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tblVehicleEF	HHD	1,651.06	1,442.00
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	23.04	50.03
tblVehicleEF	HHD	3.15	2.22
tblVehicleEF	HHD	19.77	2.86
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
tblVehicleEF	HHD	4.0400e-004	8.0000e-006
tblVehicleEF	HHD	6.4540e-003	5.0000e-006
tblVehicleEF	HHD	0.59	4.61
tblVehicleEF	HHD	1.9500e-004	3.0000e-006
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tblVehicleEF	HHD	8.4500e-004	8.0000e-006
tblVehicleEF	HHD	0.09	2.0000e-006
tblVehicleEF	HHD	0.04	0.10

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
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tblVehicleEF	HHD	8.4500e-004	8.0000e-006
tblVehicleEF	HHD	0.10	2.0000e-006
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tblVehicleEF	HHD	0.07	0.04
tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	HHD	3.34	64.86
tblVehicleEF	HHD	1.01	0.37
tblVehicleEF	HHD	3.67	3.8240e-003
tblVehicleEF	HHD	3,818.40	10,953.35
tblVehicleEF	HHD	1,651.06	1,442.00
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tblVehicleEF	HHD	3.43	2.41
tblVehicleEF	HHD	19.81	2.86
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.0000e-005	0.00
tblVehicleEF	HHD	0.04	0.02

tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7620e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	8.3000e-005	0.00
tblVehicleEF	HHD	4.3000e-005	1.0000e-006
tblVehicleEF	HHD	5.5610e-003	3.0000e-006
tblVehicleEF	HHD	0.68	4.01
tblVehicleEF	HHD	1.6000e-005	0.00
tblVehicleEF	HHD	0.11	0.03
tblVehicleEF	HHD	8.9700e-004	9.0000e-006
tblVehicleEF	HHD	0.10	2.0000e-006
tblVehicleEF	HHD	0.04	0.10
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.5200e-004	0.00
tblVehicleEF	HHD	4.3000e-005	1.0000e-006
tblVehicleEF	HHD	5.5610e-003	3.0000e-006
tblVehicleEF	HHD	0.78	42.26
tblVehicleEF	HHD	1.6000e-005	0.00
tblVehicleEF	HHD	0.20	0.07
tblVehicleEF	HHD	8.9700e-004	9.0000e-006
tblVehicleEF	HHD	0.11	3.0000e-006
tblVehicleEF	LDA	4.2860e-003	2.5680e-003
tblVehicleEF	LDA	5.8650e-003	0.06
tblVehicleEF	LDA	0.61	0.70
tblVehicleEF	LDA	1.26	2.30
tblVehicleEF	LDA	252.52	260.95
tblVehicleEF	LDA	57.68	54.60

tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.08	0.20
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
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tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
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tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDA	2.5290e-003	2.5820e-003
tblVehicleEF	LDA	5.9800e-004	5.4000e-004
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tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.09	0.28
tblVehicleEF	LDA	5.0150e-003	3.0340e-003
tblVehicleEF	LDA	4.7840e-003	0.05
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tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7730e-003	1.5160e-003
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tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.8110e-003	2.8620e-003
tblVehicleEF	LDA	5.9400e-004	5.3200e-004
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tblVehicleEF	LDA	0.13	0.15
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tblVehicleEF	LDA	0.06	0.05
tblVehicleEF	LDA	0.09	0.23

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tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
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tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
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tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
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tblVehicleEF	LDT1	0.31	0.23
tblVehicleEF	LDT1	0.10	0.00
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tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
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tblVehicleEF	LDT1	3.4480e-003	2.6080e-003

tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
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tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
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tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
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tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
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tblVehicleEF	LDT2	0.14	0.15

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tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
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tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
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tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
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tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
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tblVehicleEF	LHD2	1.2940e-003	0.02
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tblVehicleEF	LHD2	0.09	0.02
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tblVehicleEF	LHD2	2.6800e-004	5.9000e-005
tblVehicleEF	LHD2	1.3190e-003	3.7610e-003
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tblVehicleEF	LHD2	720.74	752.75
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tblVehicleEF	LHD2	0.02	9.8520e-003
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tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
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tblVehicleEF	LHD2	0.05	6.8880e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	1.4060e-003	4.5050e-003
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.11	0.01
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0120e-003	7.2570e-003

tblVehicleEF	LHD2	2.6600e-004	5.8000e-005
tblVehicleEF	LHD2	3.3510e-003	9.6940e-003
tblVehicleEF	LHD2	0.05	6.8880e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	1.4060e-003	4.5050e-003
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.09	0.02
tblVehicleEF	LHD2	0.12	0.01
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.7880e-003	4.6370e-003
tblVehicleEF	LHD2	9.5090e-003	3.7040e-003
tblVehicleEF	LHD2	0.12	1.72
tblVehicleEF	LHD2	0.72	0.37
tblVehicleEF	LHD2	1.44	0.44
tblVehicleEF	LHD2	14.25	189.91
tblVehicleEF	LHD2	720.74	752.74
tblVehicleEF	LHD2	24.40	6.03
tblVehicleEF	LHD2	0.11	1.41
tblVehicleEF	LHD2	1.38	0.14
tblVehicleEF	LHD2	0.57	0.11
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	9.8520e-003
tblVehicleEF	LHD2	4.4000e-004	7.3000e-005
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	2.6860e-003	2.7170e-003
tblVehicleEF	LHD2	0.02	9.4060e-003

tblVehicleEF	LHD2	4.0400e-004	6.7000e-005
tblVehicleEF	LHD2	4.0000e-004	1.1050e-003
tblVehicleEF	LHD2	0.04	5.0690e-003
tblVehicleEF	LHD2	0.01	0.20
tblVehicleEF	LHD2	1.5100e-004	4.2500e-004
tblVehicleEF	LHD2	0.12	0.09
tblVehicleEF	LHD2	0.10	0.02
tblVehicleEF	LHD2	0.13	0.02
tblVehicleEF	LHD2	1.3900e-004	1.8120e-003
tblVehicleEF	LHD2	7.0110e-003	7.2570e-003
tblVehicleEF	LHD2	2.7000e-004	6.0000e-005
tblVehicleEF	LHD2	4.0000e-004	1.1050e-003
tblVehicleEF	LHD2	0.04	5.0690e-003
tblVehicleEF	LHD2	0.02	3.68
tblVehicleEF	LHD2	1.5100e-004	4.2500e-004
tblVehicleEF	LHD2	0.14	0.10
tblVehicleEF	LHD2	0.10	0.02
tblVehicleEF	LHD2	0.14	0.02
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003

tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003

tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003

tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003

tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31

tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18

tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11

tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004

tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
tblVehicleEF	MH	1.69	1.73
tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03

tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.16	0.11
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.5850e-003	9.0600e-004
tblVehicleEF	MHD	0.06	3.4050e-003
tblVehicleEF	MHD	0.41	5.42
tblVehicleEF	MHD	0.52	0.13
tblVehicleEF	MHD	6.57	0.32
tblVehicleEF	MHD	147.37	1,172.79
tblVehicleEF	MHD	1,210.28	1,109.36
tblVehicleEF	MHD	57.55	3.89
tblVehicleEF	MHD	0.76	5.38
tblVehicleEF	MHD	1.79	1.37
tblVehicleEF	MHD	11.25	1.96

tblVehicleEF	MHD	3.8380e-003	1.3080e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	3.6720e-003	1.2520e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	1.5080e-003	1.6610e-003
tblVehicleEF	MHD	0.05	2.5350e-003
tblVehicleEF	MHD	0.04	0.21
tblVehicleEF	MHD	6.3200e-004	7.7500e-004
tblVehicleEF	MHD	0.07	0.01
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.40	0.02
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	3.9000e-005
tblVehicleEF	MHD	1.5080e-003	1.6610e-003
tblVehicleEF	MHD	0.05	2.5350e-003
tblVehicleEF	MHD	0.05	4.16
tblVehicleEF	MHD	6.3200e-004	7.7500e-004
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.43	0.02
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	7.7620e-003	9.1900e-004
tblVehicleEF	MHD	0.05	3.2200e-003
tblVehicleEF	MHD	0.29	4.84

tblVehicleEF	MHD	0.53	0.13
tblVehicleEF	MHD	6.05	0.29
tblVehicleEF	MHD	156.25	1,162.65
tblVehicleEF	MHD	1,210.28	1,109.36
tblVehicleEF	MHD	57.55	3.85
tblVehicleEF	MHD	0.78	5.14
tblVehicleEF	MHD	1.67	1.28
tblVehicleEF	MHD	11.19	1.96
tblVehicleEF	MHD	3.2360e-003	1.1620e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	3.0960e-003	1.1120e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	3.9020e-003	4.2360e-003
tblVehicleEF	MHD	0.07	3.2940e-003
tblVehicleEF	MHD	0.03	0.20
tblVehicleEF	MHD	1.6400e-003	1.9810e-003
tblVehicleEF	MHD	0.07	0.01
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.37	0.01
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	3.8000e-005
tblVehicleEF	MHD	3.9020e-003	4.2360e-003
tblVehicleEF	MHD	0.07	3.2940e-003
tblVehicleEF	MHD	0.04	3.97

tblVehicleEF	MHD	1.6400e-003	1.9810e-003
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.41	0.02
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	8.9100e-004
tblVehicleEF	MHD	0.06	3.6350e-003
tblVehicleEF	MHD	0.54	6.03
tblVehicleEF	MHD	0.51	0.13
tblVehicleEF	MHD	7.31	0.35
tblVehicleEF	MHD	135.45	1,187.91
tblVehicleEF	MHD	1,210.28	1,109.35
tblVehicleEF	MHD	57.55	3.95
tblVehicleEF	MHD	0.72	5.73
tblVehicleEF	MHD	1.83	1.39
tblVehicleEF	MHD	11.33	1.96
tblVehicleEF	MHD	4.6700e-003	1.5090e-003
tblVehicleEF	MHD	0.01	6.8770e-003
tblVehicleEF	MHD	7.7800e-004	3.4000e-005
tblVehicleEF	MHD	4.4680e-003	1.4440e-003
tblVehicleEF	MHD	0.01	6.5750e-003
tblVehicleEF	MHD	7.1500e-004	3.2000e-005
tblVehicleEF	MHD	4.3200e-004	5.1000e-004
tblVehicleEF	MHD	0.05	2.4900e-003
tblVehicleEF	MHD	0.04	0.21
tblVehicleEF	MHD	1.5900e-004	2.0100e-004
tblVehicleEF	MHD	0.07	0.01

tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.43	0.02
tblVehicleEF	MHD	1.3050e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	3.9000e-005
tblVehicleEF	MHD	4.3200e-004	5.1000e-004
tblVehicleEF	MHD	0.05	2.4900e-003
tblVehicleEF	MHD	0.05	4.32
tblVehicleEF	MHD	1.5900e-004	2.0100e-004
tblVehicleEF	MHD	0.09	0.02
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.47	0.02
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
tblVehicleEF	OBUS	0.88	1.14
tblVehicleEF	OBUS	6.77	1.47
tblVehicleEF	OBUS	128.59	1,671.65
tblVehicleEF	OBUS	1,355.95	1,492.53
tblVehicleEF	OBUS	68.41	11.11
tblVehicleEF	OBUS	0.61	8.80
tblVehicleEF	OBUS	1.94	2.02
tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004

tblVehicleEF	OBUS	1.3200e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
tblVehicleEF	OBUS	0.90	1.18
tblVehicleEF	OBUS	6.09	1.32
tblVehicleEF	OBUS	135.23	1,670.58

tblVehicleEF	OBUS	1,355.95	1,492.59
tblVehicleEF	OBUS	68.41	10.86
tblVehicleEF	OBUS	0.63	8.63
tblVehicleEF	OBUS	1.81	1.87
tblVehicleEF	OBUS	2.82	1.19
tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.04	0.85
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17

tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	0.01
tblVehicleEF	OBUS	0.31	9.85
tblVehicleEF	OBUS	0.86	1.11
tblVehicleEF	OBUS	7.61	1.65
tblVehicleEF	OBUS	119.42	1,673.14
tblVehicleEF	OBUS	1,355.95	1,492.47
tblVehicleEF	OBUS	68.41	11.41
tblVehicleEF	OBUS	0.58	9.03
tblVehicleEF	OBUS	1.99	2.08
tblVehicleEF	OBUS	2.99	1.21
tblVehicleEF	OBUS	1.6800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.81
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.45	0.07
tblVehicleEF	OBUS	1.1510e-003	0.02

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1700e-004	1.1300e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.11	0.13
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.49	0.08
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3810e-003
tblVehicleEF	SBUS	0.07	8.4610e-003
tblVehicleEF	SBUS	6.73	16.57
tblVehicleEF	SBUS	0.65	0.43
tblVehicleEF	SBUS	6.39	1.31
tblVehicleEF	SBUS	1,201.53	3,573.20
tblVehicleEF	SBUS	1,096.07	1,113.09
tblVehicleEF	SBUS	44.67	7.18
tblVehicleEF	SBUS	10.71	40.83
tblVehicleEF	SBUS	4.39	6.66
tblVehicleEF	SBUS	13.82	0.61
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003

tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.34	0.05
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.5700e-004	7.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.57
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.4430e-003
tblVehicleEF	SBUS	0.05	6.7490e-003
tblVehicleEF	SBUS	6.59	16.09
tblVehicleEF	SBUS	0.67	0.43
tblVehicleEF	SBUS	4.25	0.87
tblVehicleEF	SBUS	1,259.83	3,697.06
tblVehicleEF	SBUS	1,096.07	1,113.10

tblVehicleEF	SBUS	44.67	6.45
tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22
tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13

tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11

tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003

tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004

tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08

tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CNW_TL	6.50	85.86
tblVehicleTrips	CNW_TTP	41.00	3.33
tblVehicleTrips	CW_TL	10.00	14.02
tblVehicleTrips	CW_TTP	59.00	96.67
tblVehicleTrips	DV_TP	5.00	0.00

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.68	9.80
tblVehicleTrips	SU_TR	1.68	9.80
tblVehicleTrips	WD_TR	1.68	9.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4022	4.0169	2.9317	8.2600e-003	0.8712	0.1361	1.0073	0.3584	0.1258	0.4842	0.0000	751.8051	751.8051	0.1173	0.0000	754.7369
2022	5.2844	4.4525	4.4207	0.0157	0.8289	0.0837	0.9126	0.2245	0.0785	0.3029	0.0000	1,454.7321	1,454.7321	0.1109	0.0000	1,457.5037
Maximum	**5.2844**	**4.4525**	**4.4207**	**0.0157**	**0.8712**	**0.1361**	**1.0073**	**0.3584**	**0.1258**	**0.4842**	**0.0000**	**1,454.7321**	**1,454.7321**	**0.1173**	**0.0000**	**1,457.5037**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4022	4.0169	2.9317	8.2600e-003	0.4870	0.1361	0.6231	0.1803	0.1258	0.3060	0.0000	751.8048	751.8048	0.1173	0.0000	754.7366
2022	5.2844	4.4525	4.4207	0.0157	0.7669	0.0837	0.8506	0.2093	0.0785	0.2877	0.0000	1,454.7319	1,454.7319	0.1109	0.0000	1,457.5034
Maximum	**5.2844**	**4.4525**	**4.4207**	**0.0157**	**0.7669**	**0.1361**	**0.8506**	**0.2093**	**0.1258**	**0.3060**	**0.0000**	**1,454.7319**	**1,454.7319**	**0.1173**	**0.0000**	**1,457.5034**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**26.24**	**0.00**	**23.24**	**33.18**	**0.00**	**24.57**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2021	8-31-2021	1.4929	1.4929
2	9-1-2021	11-30-2021	1.9307	1.9307
3	12-1-2021	2-28-2022	2.6648	2.6648
4	3-1-2022	5-31-2022	2.6357	2.6357
5	6-1-2022	8-31-2022	4.0643	4.0643
6	9-1-2022	9-30-2022	1.3253	1.3253
		Highest	4.0643	4.0643

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	812.4656	812.4656	0.0687	0.0142	818.4181
Mobile	7.7662	18.2288	74.0322	0.2218	20.5378	0.1677	20.7054	5.4717	0.1569	5.6287	0.0000	20,596.7101	20,596.7101	0.6126	0.0000	20,612.0243
Waste						0.0000	0.0000		0.0000	0.0000	181.2709	0.0000	181.2709	10.7128	0.0000	449.0911
Water						0.0000	0.0000		0.0000	0.0000	77.7258	170.3026	248.0284	0.2819	0.1720	306.3346
Total	**12.1092**	**18.2289**	**74.0451**	**0.2218**	**20.5378**	**0.1677**	**20.7055**	**5.4717**	**0.1570**	**5.6287**	**258.9967**	**21,579.5032**	**21,838.4999**	**11.6761**	**0.1862**	**22,185.8947**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	800.9369	800.9369	0.0677	0.0140	806.8050
Mobile	7.7460	18.1143	73.4064	0.2195	20.3105	0.1659	20.4764	5.4112	0.1553	5.5665	0.0000	20,384.5901	20,384.5901	0.6085	0.0000	20,399.8023
Waste						0.0000	0.0000		0.0000	0.0000	90.6355	0.0000	90.6355	5.3564	0.0000	224.5455
Water						0.0000	0.0000		0.0000	0.0000	62.1806	136.2421	198.4227	0.2255	0.1376	245.0677
Total	**12.0890**	**18.1144**	**73.4193**	**0.2195**	**20.3105**	**0.1660**	**20.4765**	**5.4112**	**0.1554**	**5.5665**	**152.8161**	**21,321.7940**	**21,474.6101**	**6.2582**	**0.1516**	**21,676.2471**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.17**	**0.63**	**0.85**	**1.03**	**1.11**	**1.04**	**1.11**	**1.11**	**1.04**	**1.10**	**41.00**	**1.19**	**1.67**	**46.40**	**18.58**	**2.30**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/14/2021	5	10	
2	Site Preparation	Site Preparation	6/15/2021	7/26/2021	5	30	
3	Grading	Grading	7/27/2021	11/8/2021	5	75	
4	Building Construction	Building Construction	11/9/2021	5/31/2022	5	146	
5	Paving	Paving	6/1/2022	9/30/2022	5	88	
6	Architectural Coating	Architectural Coating	6/1/2022	9/30/2022	5	88	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 55.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,425,000; Non-Residential Outdoor: 475,000; Striped Parking Area: 146,074 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,422.00	555.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	284.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2100e-003**	**7.2100e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.7000e-004	1.9000e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4714	0.4714	1.0000e-005	0.0000	0.4717
Total	**2.6000e-004**	**1.7000e-004**	**1.9000e-003**	**1.0000e-005**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4714**	**0.4714**	**1.0000e-005**	**0.0000**	**0.4717**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2100e-003**	**7.2100e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.7000e-004	1.9000e-003	1.0000e-005	5.1000e-004	0.0000	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4714	0.4714	1.0000e-005	0.0000	0.4717
Total	**2.6000e-004**	**1.7000e-004**	**1.9000e-003**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4714**	**0.4714**	**1.0000e-005**	**0.0000**	**0.4717**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1536	50.1536	0.0162	0.0000	50.5591
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.2710**	**0.0307**	**0.3017**	**0.1490**	**0.0282**	**0.1772**	**0.0000**	**50.1536**	**50.1536**	**0.0162**	**0.0000**	**50.5591**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	6.1000e-004	6.8300e-003	2.0000e-005	1.9800e-003	1.0000e-005	2.0000e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6972	1.6972	4.0000e-005	0.0000	1.6983
Total	**9.3000e-004**	**6.1000e-004**	**6.8300e-003**	**2.0000e-005**	**1.9800e-003**	**1.0000e-005**	**2.0000e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.6972**	**1.6972**	**4.0000e-005**	**0.0000**	**1.6983**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1057	0.0000	0.1057	0.0581	0.0000	0.0581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0583	0.6075	0.3173	5.7000e-004		0.0307	0.0307		0.0282	0.0282	0.0000	50.1535	50.1535	0.0162	0.0000	50.5590
Total	**0.0583**	**0.6075**	**0.3173**	**5.7000e-004**	**0.1057**	**0.0307**	**0.1364**	**0.0581**	**0.0282**	**0.0863**	**0.0000**	**50.1535**	**50.1535**	**0.0162**	**0.0000**	**50.5590**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	6.1000e-004	6.8300e-003	2.0000e-005	1.8300e-003	1.0000e-005	1.8400e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.6972	1.6972	4.0000e-005	0.0000	1.6983
Total	**9.3000e-004**	**6.1000e-004**	**6.8300e-003**	**2.0000e-005**	**1.8300e-003**	**1.0000e-005**	**1.8400e-003**	**4.9000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.6972**	**1.6972**	**4.0000e-005**	**0.0000**	**1.6983**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1572	1.7400	1.1579	2.3300e-003		0.0745	0.0745		0.0685	0.0685	0.0000	204.3562	204.3562	0.0661	0.0000	206.0085
Total	**0.1572**	**1.7400**	**1.1579**	**2.3300e-003**	**0.3253**	**0.0745**	**0.3997**	**0.1349**	**0.0685**	**0.2034**	**0.0000**	**204.3562**	**204.3562**	**0.0661**	**0.0000**	**206.0085**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-003	1.7000e-003	0.0190	5.0000e-005	5.5100e-003	4.0000e-005	5.5500e-003	1.4700e-003	4.0000e-005	1.5000e-003	0.0000	4.7143	4.7143	1.2000e-004	0.0000	4.7174
Total	**2.6000e-003**	**1.7000e-003**	**0.0190**	**5.0000e-005**	**5.5100e-003**	**4.0000e-005**	**5.5500e-003**	**1.4700e-003**	**4.0000e-005**	**1.5000e-003**	**0.0000**	**4.7143**	**4.7143**	**1.2000e-004**	**0.0000**	**4.7174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1269	0.0000	0.1269	0.0526	0.0000	0.0526	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1572	1.7400	1.1579	2.3300e-003		0.0745	0.0745		0.0685	0.0685	0.0000	204.3559	204.3559	0.0661	0.0000	206.0083
Total	**0.1572**	**1.7400**	**1.1579**	**2.3300e-003**	**0.1269**	**0.0745**	**0.2013**	**0.0526**	**0.0685**	**0.1211**	**0.0000**	**204.3559**	**204.3559**	**0.0661**	**0.0000**	**206.0083**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-003	1.7000e-003	0.0190	5.0000e-005	5.0800e-003	4.0000e-005	5.1200e-003	1.3600e-003	4.0000e-005	1.4000e-003	0.0000	4.7143	4.7143	1.2000e-004	0.0000	4.7174
Total	**2.6000e-003**	**1.7000e-003**	**0.0190**	**5.0000e-005**	**5.0800e-003**	**4.0000e-005**	**5.1200e-003**	**1.3600e-003**	**4.0000e-005**	**1.4000e-003**	**0.0000**	**4.7143**	**4.7143**	**1.2000e-004**	**0.0000**	**4.7174**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3399	0.3232	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	45.1693	45.1693	0.0109	0.0000	45.4417
Total	**0.0371**	**0.3399**	**0.3232**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**45.1693**	**45.1693**	**0.0109**	**0.0000**	**45.4417**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.1071	0.2959	2.6400e-003	0.0633	3.0600e-003	0.0663	0.0183	2.9300e-003	0.0212	0.0000	253.9441	253.9441	0.0145	0.0000	254.3071
Worker	0.0960	0.0628	0.7018	1.9300e-003	0.2037	1.4200e-003	0.2051	0.0542	1.3100e-003	0.0555	0.0000	174.2987	174.2987	4.5800e-003	0.0000	174.4131
Total	**0.1301**	**1.1699**	**0.9977**	**4.5700e-003**	**0.2669**	**4.4800e-003**	**0.2714**	**0.0725**	**4.2400e-003**	**0.0767**	**0.0000**	**428.2428**	**428.2428**	**0.0191**	**0.0000**	**428.7202**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3399	0.3232	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	45.1692	45.1692	0.0109	0.0000	45.4417
Total	**0.0371**	**0.3399**	**0.3232**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**45.1692**	**45.1692**	**0.0109**	**0.0000**	**45.4417**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.1071	0.2959	2.6400e-003	0.0593	3.0600e-003	0.0623	0.0173	2.9300e-003	0.0202	0.0000	253.9441	253.9441	0.0145	0.0000	254.3071
Worker	0.0960	0.0628	0.7018	1.9300e-003	0.1878	1.4200e-003	0.1892	0.0503	1.3100e-003	0.0516	0.0000	174.2987	174.2987	4.5800e-003	0.0000	174.4131
Total	**0.1301**	**1.1699**	**0.9977**	**4.5700e-003**	**0.2471**	**4.4800e-003**	**0.2515**	**0.0676**	**4.2400e-003**	**0.0718**	**0.0000**	**428.2428**	**428.2428**	**0.0191**	**0.0000**	**428.7202**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0913	0.8354	0.8754	1.4400e-003		0.0433	0.0433		0.0407	0.0407	0.0000	123.9730	123.9730	0.0297	0.0000	124.7155
Total	**0.0913**	**0.8354**	**0.8754**	**1.4400e-003**		**0.0433**	**0.0433**		**0.0407**	**0.0407**	**0.0000**	**123.9730**	**123.9730**	**0.0297**	**0.0000**	**124.7155**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0867	2.8840	0.7485	7.1800e-003	0.1736	7.3600e-003	0.1809	0.0502	7.0400e-003	0.0572	0.0000	690.5942	690.5942	0.0387	0.0000	691.5617
Worker	0.2462	0.1548	1.7694	5.1000e-003	0.5587	3.8000e-003	0.5625	0.1486	3.5100e-003	0.1521	0.0000	461.0755	461.0755	0.0113	0.0000	461.3575
Total	**0.3329**	**3.0388**	**2.5179**	**0.0123**	**0.7323**	**0.0112**	**0.7435**	**0.1988**	**0.0106**	**0.2093**	**0.0000**	**1,151.6698**	**1,151.6698**	**0.0500**	**0.0000**	**1,152.9192**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0913	0.8354	0.8754	1.4400e-003		0.0433	0.0433		0.0407	0.0407	0.0000	123.9729	123.9729	0.0297	0.0000	124.7154
Total	**0.0913**	**0.8354**	**0.8754**	**1.4400e-003**		**0.0433**	**0.0433**		**0.0407**	**0.0407**	**0.0000**	**123.9729**	**123.9729**	**0.0297**	**0.0000**	**124.7154**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0867	2.8840	0.7485	7.1800e-003	0.1626	7.3600e-003	0.1699	0.0475	7.0400e-003	0.0545	0.0000	690.5942	690.5942	0.0387	0.0000	691.5617
Worker	0.2462	0.1548	1.7694	5.1000e-003	0.5153	3.8000e-003	0.5191	0.1379	3.5100e-003	0.1414	0.0000	461.0755	461.0755	0.0113	0.0000	461.3575
Total	**0.3329**	**3.0388**	**2.5179**	**0.0123**	**0.6778**	**0.0112**	**0.6890**	**0.1854**	**0.0106**	**0.1959**	**0.0000**	**1,151.6698**	**1,151.6698**	**0.0500**	**0.0000**	**1,152.9192**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.4895	0.6415	1.0000e-003		0.0250	0.0250		0.0230	0.0230	0.0000	88.1213	88.1213	0.0285	0.0000	88.8338
Paving	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0669**	**0.4895**	**0.6415**	**1.0000e-003**		**0.0250**	**0.0250**		**0.0230**	**0.0230**	**0.0000**	**88.1213**	**88.1213**	**0.0285**	**0.0000**	**88.8338**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	1.3400e-003	0.0154	4.0000e-005	4.8500e-003	3.0000e-005	4.8800e-003	1.2900e-003	3.0000e-005	1.3200e-003	0.0000	4.0000	4.0000	1.0000e-004	0.0000	4.0025
Total	**2.1400e-003**	**1.3400e-003**	**0.0154**	**4.0000e-005**	**4.8500e-003**	**3.0000e-005**	**4.8800e-003**	**1.2900e-003**	**3.0000e-005**	**1.3200e-003**	**0.0000**	**4.0000**	**4.0000**	**1.0000e-004**	**0.0000**	**4.0025**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.4895	0.6415	1.0000e-003		0.0250	0.0250		0.0230	0.0230	0.0000	88.1212	88.1212	0.0285	0.0000	88.8337
Paving	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0669**	**0.4895**	**0.6415**	**1.0000e-003**		**0.0250**	**0.0250**		**0.0230**	**0.0230**	**0.0000**	**88.1212**	**88.1212**	**0.0285**	**0.0000**	**88.8337**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	1.3400e-003	0.0154	4.0000e-005	4.4700e-003	3.0000e-005	4.5000e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	4.0000	4.0000	1.0000e-004	0.0000	4.0025
Total	**2.1400e-003**	**1.3400e-003**	**0.0154**	**4.0000e-005**	**4.4700e-003**	**3.0000e-005**	**4.5000e-003**	**1.2000e-003**	**3.0000e-005**	**1.2300e-003**	**0.0000**	**4.0000**	**4.0000**	**1.0000e-004**	**0.0000**	**4.0025**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-003	0.0620	0.0798	1.3000e-004		3.6000e-003	3.6000e-003		3.6000e-003	3.6000e-003	0.0000	11.2343	11.2343	7.3000e-004	0.0000	11.2526
Total	**4.7508**	**0.0620**	**0.0798**	**1.3000e-004**		**3.6000e-003**	**3.6000e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**11.2343**	**11.2343**	**7.3000e-004**	**0.0000**	**11.2526**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0254	0.2906	8.4000e-004	0.0918	6.2000e-004	0.0924	0.0244	5.8000e-004	0.0250	0.0000	75.7338	75.7338	1.8500e-003	0.0000	75.7801
Total	**0.0404**	**0.0254**	**0.2906**	**8.4000e-004**	**0.0918**	**6.2000e-004**	**0.0924**	**0.0244**	**5.8000e-004**	**0.0250**	**0.0000**	**75.7338**	**75.7338**	**1.8500e-003**	**0.0000**	**75.7801**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-003	0.0620	0.0798	1.3000e-004		3.6000e-003	3.6000e-003		3.6000e-003	3.6000e-003	0.0000	11.2343	11.2343	7.3000e-004	0.0000	11.2526
Total	**4.7508**	**0.0620**	**0.0798**	**1.3000e-004**		**3.6000e-003**	**3.6000e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**11.2343**	**11.2343**	**7.3000e-004**	**0.0000**	**11.2526**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0254	0.2906	8.4000e-004	0.0846	6.2000e-004	0.0853	0.0227	5.8000e-004	0.0232	0.0000	75.7338	75.7338	1.8500e-003	0.0000	75.7801
Total	**0.0404**	**0.0254**	**0.2906**	**8.4000e-004**	**0.0846**	**6.2000e-004**	**0.0853**	**0.0227**	**5.8000e-004**	**0.0232**	**0.0000**	**75.7338**	**75.7338**	**1.8500e-003**	**0.0000**	**75.7801**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.7460	18.1143	73.4064	0.2195	20.3105	0.1659	20.4764	5.4112	0.1553	5.5665	0.0000	20,384.5901	20,384.5901	0.6085	0.0000	20,399.8023
Unmitigated	7.7662	18.2288	74.0322	0.2218	20.5378	0.1677	20.7054	5.4717	0.1569	5.6287	0.0000	20,596.7101	20,596.7101	0.6126	0.0000	20,612.0243

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	9,310.00	9,310.00	9310.00	55,618,564	55,003,110
Total	9,310.00	9,310.00	9,310.00	55,618,564	55,003,110

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	14.02	0.00	85.86	96.67	0.00	3.33	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Parking Lot	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.578841	0.038733	0.206173	0.118029	0.019040	0.000000	0.000000	0.033300	0.000000	0.000000	0.005884	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	800.9369	800.9369	0.0677	0.0140	806.8050
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	812.4656	812.4656	0.0687	0.0142	818.4181
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	638655	99.3633	8.4000e-003	1.7400e-003	100.0913
Parking Lot	213444	33.2081	2.8100e-003	5.8000e-004	33.4514
Unrefrigerated Warehouse-No Rail	4.37e +006	679.8941	0.0575	0.0119	684.8754
Total		**812.4656**	**0.0687**	**0.0142**	**818.4181**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	638655	99.3633	8.4000e-003	1.7400e-003	100.0913
Parking Lot	213444	33.2081	2.8100e-003	5.8000e-004	33.4514
Unrefrigerated Warehouse-No Rail	4.2959e +006	668.3655	0.0565	0.0117	673.2623
Total		**800.9369**	**0.0677**	**0.0140**	**806.8050**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Unmitigated	4.3430	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-003	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Total	**4.3430**	**1.2000e-004**	**0.0129**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0250**	**0.0250**	**7.0000e-005**	**0.0000**	**0.0266**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2000e-003	1.2000e-004	0.0129	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0250	0.0250	7.0000e-005	0.0000	0.0266
Total	**4.3430**	**1.2000e-004**	**0.0129**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0250**	**0.0250**	**7.0000e-005**	**0.0000**	**0.0266**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	198.4227	0.2255	0.1376	245.0677
Unmitigated	248.0284	0.2819	0.1720	306.3346

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	219.688 / 0	248.0284	0.2819	0.1720	306.3346
Total		**248.0284**	**0.2819**	**0.1720**	**306.3346**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	175.75 / 0	198.4227	0.2255	0.1376	245.0677
Total		**198.4227**	**0.2255**	**0.1376**	**245.0677**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	90.6355	5.3564	0.0000	224.5455
Unmitigated	181.2709	10.7128	0.0000	449.0911

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	893	181.2709	10.7128	0.0000	449.0911
Total		**181.2709**	**10.7128**	**0.0000**	**449.0911**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	446.5	90.6355	5.3564	0.0000	224.5455
Total		**90.6355**	**5.3564**	**0.0000**	**224.5455**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SMF Master Plan Update

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government (Civic Center)	267.73	1000sqft	6.15	267,730.00	0
Unrefrigerated Warehouse-No Rail	3,908.26	1000sqft	329.59	3,908,256.00	0
Unenclosed Parking with Elevator	2,252.50	1000sqft	10.30	2,252,500.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.5 **Precipitation Freq (Days)** 58

Climate Zone 6 **Operational Year** 2022

Utility Company Sacramento Municipal Utility District

CO2 Intensity (lb/MWhr) 343 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - No construction info at this time, assume construction will take 18 months. CO2 intensity factor updated per Table A-8 of the SAC County GHG Thresholds document.

Land Use - Square Footages and Acreage based on plans provided by SMF Airport. Government (Civic Center) = New Concourse/Terminal Expansion

Construction Phase - No Construction info at this time, assume construction will take 18 months, paving and arch coating phases assumed to overlap.

Grading -

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Vehicle Emission Factors - EMFAC2017 2022 with Safe Rule

Energy Use - no natural gas

Construction Off-road Equipment Mitigation - SMAQMD Rule 403 - Fugitive Dust

Mobile Land Use Mitigation - Require EV infrastructure

Mobile Commute Mitigation - Require TDM Plan

Energy Mitigation - 2019 standards will reduce nonresidential energy use by 30% over 2016 standard

Water Mitigation - Consistent with current building code, use low flow fixtures

Waste Mitigation - AB 939 - divert atleast 50% of solid waste from landfills

Area Coating -

Area Mitigation - low VOC paint

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	10
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	10
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	100	10
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	400.00	20.00

tblConstructionPhase	NumDays	240.00	40.00
tblConstructionPhase	NumDays	620.00	60.00
tblConstructionPhase	NumDays	6,200.00	251.00
tblConstructionPhase	NumDays	440.00	65.00
tblConstructionPhase	NumDays	440.00	32.00
tblEnergyUse	NT24E	5.75	7.13
tblEnergyUse	NT24E	1.36	2.74
tblEnergyUse	NT24NG	0.68	0.00
tblEnergyUse	T24NG	12.42	0.00
tblEnergyUse	T24NG	0.49	0.00
tblLandUse	LandUseSquareFeet	3,908,260.00	3,908,256.00
tblLandUse	LotAcreage	89.72	329.59
tblLandUse	LotAcreage	51.71	10.30
tblProjectCharacteristics	CO2IntensityFactor	590.31	343
tblVehicleEF	HHD	0.60	0.18
tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.43	48.11
tblVehicleEF	HHD	1.02	0.46
tblVehicleEF	HHD	3.28	1.8300e-003
tblVehicleEF	HHD	4,159.31	9,153.87
tblVehicleEF	HHD	1,651.06	1,538.11
tblVehicleEF	HHD	9.15	0.02
tblVehicleEF	HHD	22.32	53.94
tblVehicleEF	HHD	3.36	3.68
tblVehicleEF	HHD	19.79	2.45
tblVehicleEF	HHD	0.04	0.05

tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.05
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
tblVehicleEF	HHD	0.63	3.57
tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4600e-004	0.00
tblVehicleEF	HHD	1.5300e-004	6.1000e-005
tblVehicleEF	HHD	5.4300e-003	1.0000e-004
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tblVehicleEF	HHD	7.2000e-005	2.7000e-005
tblVehicleEF	HHD	0.20	0.14
tblVehicleEF	HHD	8.2400e-004	6.4300e-004
tblVehicleEF	HHD	0.10	1.0000e-006
tblVehicleEF	HHD	0.57	0.19

tblVehicleEF	HHD	0.07	0.06
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	1.77	47.02
tblVehicleEF	HHD	1.03	0.46
tblVehicleEF	HHD	3.02	1.6860e-003
tblVehicleEF	HHD	4,406.18	9,138.56
tblVehicleEF	HHD	1,651.06	1,538.11
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tblVehicleEF	HHD	23.04	52.70
tblVehicleEF	HHD	3.15	3.45
tblVehicleEF	HHD	19.77	2.45
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	8.3000e-005	1.0000e-006
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.59	3.73
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	8.4500e-004	6.7700e-004

tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	0.04	0.09
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	4.0400e-004	1.7400e-004
tblVehicleEF	HHD	6.4540e-003	1.2400e-004
tblVehicleEF	HHD	0.68	4.27
tblVehicleEF	HHD	1.9500e-004	8.5000e-005
tblVehicleEF	HHD	0.20	0.14
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tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.03

tblVehicleEF	HHD	9.0000e-005	1.0000e-006
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6320e-003	8.7710e-003
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tblVehicleEF	HHD	4.3000e-005	1.3000e-005
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tblVehicleEF	HHD	1.6000e-005	4.0000e-006
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tblVehicleEF	HHD	8.9700e-004	6.8200e-004
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tblVehicleEF	HHD	0.02	0.01
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tblVehicleEF	HHD	1.6000e-005	4.0000e-006
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tblVehicleEF	LDA	0.11	0.12
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tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
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tblVehicleEF	LDA	0.03	0.22
tblVehicleEF	LDA	0.02	0.01
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tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.24
tblVehicleEF	LDA	0.06	0.21
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tblVehicleEF	LDA	0.08	0.56
tblVehicleEF	LDA	0.02	0.02
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tblVehicleEF	LDA	0.07	0.23
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tblVehicleEF	LDA	0.09	0.23
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tblVehicleEF	LDA	2.2990e-003	1.9710e-003
tblVehicleEF	LDA	1.6350e-003	1.3970e-003
tblVehicleEF	LDA	2.1140e-003	1.8120e-003
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tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	9.6040e-003
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.31
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tblVehicleEF	LDA	0.01	0.09
tblVehicleEF	LDA	0.11	0.12
tblVehicleEF	LDA	7.3210e-003	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.05	0.28
tblVehicleEF	LDA	0.10	0.34
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tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	1.36	1.20
tblVehicleEF	LDT1	3.32	2.51
tblVehicleEF	LDT1	313.76	308.81
tblVehicleEF	LDT1	71.71	65.79
tblVehicleEF	LDT1	0.13	0.10

tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
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tblVehicleEF	LDT1	0.10	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.20	0.80
tblVehicleEF	LDT1	0.23	0.41
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tblVehicleEF	LDT1	0.31	0.23
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tblVehicleEF	LDT1	0.20	0.80
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tblVehicleEF	LDT1	0.01	0.07
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tblVehicleEF	LDT1	0.17	0.27

tblVehicleEF	LDT1	2.6720e-003	2.0540e-003
tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
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tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	0.00
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	3.4910e-003	3.3440e-003
tblVehicleEF	LDT1	7.6400e-004	6.4200e-004
tblVehicleEF	LDT1	0.41	1.83
tblVehicleEF	LDT1	0.40	0.30
tblVehicleEF	LDT1	0.25	1.14
tblVehicleEF	LDT1	0.05	0.04
tblVehicleEF	LDT1	0.19	0.79
tblVehicleEF	LDT1	0.20	0.37
tblVehicleEF	LDT1	0.01	5.1180e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.31	1.14
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tblVehicleEF	LDT1	71.71	67.09
tblVehicleEF	LDT1	0.15	0.11
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.6720e-003	2.0540e-003

tblVehicleEF	LDT1	3.4480e-003	2.6080e-003
tblVehicleEF	LDT1	2.4650e-003	1.8930e-003
tblVehicleEF	LDT1	3.1710e-003	2.3980e-003
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tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.28	0.49
tblVehicleEF	LDT1	3.0640e-003	2.9790e-003
tblVehicleEF	LDT1	7.9000e-004	6.6400e-004
tblVehicleEF	LDT1	0.04	0.19
tblVehicleEF	LDT1	0.32	0.23
tblVehicleEF	LDT1	0.02	0.11
tblVehicleEF	LDT1	0.04	0.03
tblVehicleEF	LDT1	0.24	0.97
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT2	6.1470e-003	3.8830e-003
tblVehicleEF	LDT2	8.5390e-003	0.08
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.80	2.96
tblVehicleEF	LDT2	354.77	334.69
tblVehicleEF	LDT2	81.19	72.01
tblVehicleEF	LDT2	0.08	0.08
tblVehicleEF	LDT2	0.15	0.33
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003

tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.12	0.36
tblVehicleEF	LDT2	3.5550e-003	3.3110e-003
tblVehicleEF	LDT2	8.4200e-004	7.1300e-004
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.05	0.33
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.49
tblVehicleEF	LDT2	0.13	0.40
tblVehicleEF	LDT2	7.1660e-003	4.5690e-003
tblVehicleEF	LDT2	6.9600e-003	0.06
tblVehicleEF	LDT2	1.06	1.20
tblVehicleEF	LDT2	1.48	2.43
tblVehicleEF	LDT2	393.11	363.56
tblVehicleEF	LDT2	81.19	70.95
tblVehicleEF	LDT2	0.08	0.07
tblVehicleEF	LDT2	0.14	0.30
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003

tblVehicleEF	LDT2	2.1550e-003	1.7360e-003
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.09	0.30
tblVehicleEF	LDT2	3.9410e-003	3.5970e-003
tblVehicleEF	LDT2	8.3700e-004	7.0200e-004
tblVehicleEF	LDT2	0.16	1.10
tblVehicleEF	LDT2	0.17	0.18
tblVehicleEF	LDT2	0.12	0.80
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.48
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.8250e-003	3.6190e-003
tblVehicleEF	LDT2	0.01	0.09
tblVehicleEF	LDT2	0.79	0.89
tblVehicleEF	LDT2	2.24	3.71
tblVehicleEF	LDT2	344.50	326.99
tblVehicleEF	LDT2	81.19	73.44
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	0.17	0.37
tblVehicleEF	LDT2	1.7350e-003	1.4960e-003
tblVehicleEF	LDT2	2.3440e-003	1.8880e-003
tblVehicleEF	LDT2	1.5960e-003	1.3770e-003
tblVehicleEF	LDT2	2.1550e-003	1.7360e-003

tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.14	0.43
tblVehicleEF	LDT2	3.4510e-003	3.2350e-003
tblVehicleEF	LDT2	8.5000e-004	7.2700e-004
tblVehicleEF	LDT2	0.02	0.13
tblVehicleEF	LDT2	0.14	0.15
tblVehicleEF	LDT2	0.01	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.09	0.59
tblVehicleEF	LDT2	0.15	0.47
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.29	1.04
tblVehicleEF	LHD1	2.70	0.98
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.85
tblVehicleEF	LHD1	31.04	10.23
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.97	1.40
tblVehicleEF	LHD1	1.02	0.30
tblVehicleEF	LHD1	9.9400e-004	0.01

tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8890e-003	7.8580e-003
tblVehicleEF	LHD1	3.6100e-004	1.0100e-004
tblVehicleEF	LHD1	3.5820e-003	0.04
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	1.4260e-003	0.02
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.35	0.56
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	5.3360e-003	0.07
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.01

tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.32	1.07
tblVehicleEF	LHD1	2.48	0.91
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.90
tblVehicleEF	LHD1	31.04	10.10
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	1.84	1.30
tblVehicleEF	LHD1	0.95	0.28
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004
tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.35	0.55
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
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tblVehicleEF	LHD1	3.5700e-004	1.0000e-004

tblVehicleEF	LHD1	9.1870e-003	0.10
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.6360e-003	0.04
tblVehicleEF	LHD1	0.19	0.15
tblVehicleEF	LHD1	0.35	0.55
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tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	2.42
tblVehicleEF	LHD1	1.26	1.02
tblVehicleEF	LHD1	2.99	1.09
tblVehicleEF	LHD1	9.21	129.43
tblVehicleEF	LHD1	701.67	805.80
tblVehicleEF	LHD1	31.04	10.41
tblVehicleEF	LHD1	0.09	1.09
tblVehicleEF	LHD1	2.02	1.43
tblVehicleEF	LHD1	1.10	0.32
tblVehicleEF	LHD1	9.9400e-004	0.01
tblVehicleEF	LHD1	0.01	9.8680e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8000e-004	2.4000e-004
tblVehicleEF	LHD1	9.5100e-004	0.01
tblVehicleEF	LHD1	2.5200e-003	2.4670e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0100e-004	2.2100e-004

tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.29
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.30	0.08
tblVehicleEF	LHD1	9.2000e-005	1.2520e-003
tblVehicleEF	LHD1	6.8880e-003	7.8580e-003
tblVehicleEF	LHD1	3.6700e-004	1.0300e-004
tblVehicleEF	LHD1	1.0290e-003	0.01
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.02	0.41
tblVehicleEF	LHD1	3.7300e-004	4.1450e-003
tblVehicleEF	LHD1	0.18	0.15
tblVehicleEF	LHD1	0.39	0.61
tblVehicleEF	LHD1	0.33	0.09
tblVehicleEF	LHD2	3.6020e-003	0.04
tblVehicleEF	LHD2	9.9840e-003	8.6010e-003
tblVehicleEF	LHD2	8.8820e-003	8.3040e-003
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tblVehicleEF	LHD2	0.73	0.81
tblVehicleEF	LHD2	1.31	0.55
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tblVehicleEF	LHD2	720.74	795.82
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tblVehicleEF	LHD2	0.11	1.55

tblVehicleEF	LHD2	1.35	1.49
tblVehicleEF	LHD2	0.53	0.17
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003
tblVehicleEF	LHD2	2.6800e-004	6.7000e-005
tblVehicleEF	LHD2	1.3190e-003	0.02
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	5.6200e-004	7.9240e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.6020e-003	0.04

tblVehicleEF	LHD2	0.01	8.7180e-003
tblVehicleEF	LHD2	8.3620e-003	7.8270e-003
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tblVehicleEF	LHD2	0.74	0.82
tblVehicleEF	LHD2	1.20	0.51
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tblVehicleEF	LHD2	720.74	795.84
tblVehicleEF	LHD2	24.40	6.74
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.26	1.40
tblVehicleEF	LHD2	0.50	0.16
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004
tblVehicleEF	LHD2	3.3510e-003	0.05
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.01	0.22
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tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0120e-003	7.6850e-003

tblVehicleEF	LHD2	2.6600e-004	6.7000e-005
tblVehicleEF	LHD2	3.3510e-003	0.05
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.4060e-003	0.02
tblVehicleEF	LHD2	0.14	0.16
tblVehicleEF	LHD2	0.09	0.24
tblVehicleEF	LHD2	0.12	0.04
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tblVehicleEF	LHD2	9.7880e-003	8.4740e-003
tblVehicleEF	LHD2	9.5090e-003	8.8700e-003
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tblVehicleEF	LHD2	0.72	0.80
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tblVehicleEF	LHD2	720.74	795.80
tblVehicleEF	LHD2	24.40	6.92
tblVehicleEF	LHD2	0.11	1.55
tblVehicleEF	LHD2	1.38	1.53
tblVehicleEF	LHD2	0.57	0.19
tblVehicleEF	LHD2	1.2940e-003	0.02
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.4000e-004	1.1400e-004
tblVehicleEF	LHD2	1.2380e-003	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.0400e-004	1.0500e-004

tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.22
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	1.3900e-004	1.8570e-003
tblVehicleEF	LHD2	7.0110e-003	7.6850e-003
tblVehicleEF	LHD2	2.7000e-004	6.8000e-005
tblVehicleEF	LHD2	4.0000e-004	5.6790e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.29
tblVehicleEF	LHD2	1.5100e-004	2.1080e-003
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.10	0.27
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	MCY	0.44	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.29	20.27
tblVehicleEF	MCY	10.10	8.92
tblVehicleEF	MCY	168.00	210.86
tblVehicleEF	MCY	47.74	63.07
tblVehicleEF	MCY	1.16	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003

tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.37	2.37
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.26	2.00
tblVehicleEF	MCY	2.0800e-003	2.0870e-003
tblVehicleEF	MCY	7.0900e-004	6.2400e-004
tblVehicleEF	MCY	1.41	2.80
tblVehicleEF	MCY	0.93	0.92
tblVehicleEF	MCY	0.67	1.33
tblVehicleEF	MCY	2.89	2.89
tblVehicleEF	MCY	0.69	2.32
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MCY	0.43	0.34
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	20.52	20.50
tblVehicleEF	MCY	9.12	8.02
tblVehicleEF	MCY	168.00	210.96
tblVehicleEF	MCY	47.74	60.52
tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003

tblVehicleEF	MCY	3.4870e-003	3.0200e-003
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.30	2.30
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	1.89	1.66
tblVehicleEF	MCY	2.0810e-003	2.0880e-003
tblVehicleEF	MCY	6.8200e-004	5.9900e-004
tblVehicleEF	MCY	3.91	7.78
tblVehicleEF	MCY	1.50	1.50
tblVehicleEF	MCY	2.18	4.32
tblVehicleEF	MCY	2.81	2.81
tblVehicleEF	MCY	0.68	2.28
tblVehicleEF	MCY	2.06	1.81
tblVehicleEF	MCY	0.46	0.36
tblVehicleEF	MCY	0.21	0.32
tblVehicleEF	MCY	22.39	22.37
tblVehicleEF	MCY	12.10	10.76
tblVehicleEF	MCY	168.00	214.72
tblVehicleEF	MCY	47.74	67.64
tblVehicleEF	MCY	1.27	1.27
tblVehicleEF	MCY	0.35	0.30
tblVehicleEF	MCY	1.9070e-003	1.9340e-003
tblVehicleEF	MCY	3.6910e-003	3.1980e-003
tblVehicleEF	MCY	1.7870e-003	1.8120e-003
tblVehicleEF	MCY	3.4870e-003	3.0200e-003

tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	2.52	2.52
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	2.81	2.50
tblVehicleEF	MCY	2.1190e-003	2.1250e-003
tblVehicleEF	MCY	7.5900e-004	6.6900e-004
tblVehicleEF	MCY	0.27	0.54
tblVehicleEF	MCY	0.95	0.94
tblVehicleEF	MCY	0.11	0.21
tblVehicleEF	MCY	3.07	3.07
tblVehicleEF	MCY	0.80	2.71
tblVehicleEF	MCY	3.06	2.72
tblVehicleEF	MDV	0.01	5.0650e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.32	1.09
tblVehicleEF	MDV	3.39	3.47
tblVehicleEF	MDV	479.92	410.48
tblVehicleEF	MDV	108.64	87.89
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.30	0.40
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.10	0.52

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.26	0.47
tblVehicleEF	MDV	4.8090e-003	4.0580e-003
tblVehicleEF	MDV	1.1460e-003	8.7000e-004
tblVehicleEF	MDV	0.10	0.52
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.07	0.40
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.12	0.55
tblVehicleEF	MDV	0.29	0.52
tblVehicleEF	MDV	0.01	5.9710e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.67	1.38
tblVehicleEF	MDV	2.78	2.84
tblVehicleEF	MDV	530.44	440.57
tblVehicleEF	MDV	108.64	86.61
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.28	0.37
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21

tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.21	0.39
tblVehicleEF	MDV	5.3190e-003	4.3560e-003
tblVehicleEF	MDV	1.1350e-003	8.5700e-004
tblVehicleEF	MDV	0.24	1.31
tblVehicleEF	MDV	0.25	0.21
tblVehicleEF	MDV	0.18	0.97
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.12	0.54
tblVehicleEF	MDV	0.23	0.43
tblVehicleEF	MDV	0.01	4.7440e-003
tblVehicleEF	MDV	0.02	0.11
tblVehicleEF	MDV	1.26	1.04
tblVehicleEF	MDV	4.24	4.37
tblVehicleEF	MDV	466.38	402.47
tblVehicleEF	MDV	108.64	89.63
tblVehicleEF	MDV	0.17	0.12
tblVehicleEF	MDV	0.34	0.45
tblVehicleEF	MDV	1.8500e-003	1.6220e-003
tblVehicleEF	MDV	2.5310e-003	2.0530e-003
tblVehicleEF	MDV	1.7060e-003	1.4960e-003
tblVehicleEF	MDV	2.3270e-003	1.8880e-003
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.32	0.57
tblVehicleEF	MDV	4.6730e-003	3.9790e-003
tblVehicleEF	MDV	1.1610e-003	8.8700e-004
tblVehicleEF	MDV	0.03	0.16
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.15	0.66
tblVehicleEF	MDV	0.35	0.62
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.75	1.44
tblVehicleEF	MH	6.42	2.24
tblVehicleEF	MH	1,233.39	1,603.42
tblVehicleEF	MH	60.21	19.41
tblVehicleEF	MH	1.62	1.67
tblVehicleEF	MH	0.93	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07

tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.1400e-004	1.9200e-004
tblVehicleEF	MH	1.35	0.11
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.34	0.03
tblVehicleEF	MH	0.17	0.12
tblVehicleEF	MH	0.02	1.49
tblVehicleEF	MH	0.41	0.11
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.87	1.49
tblVehicleEF	MH	5.74	2.01
tblVehicleEF	MH	1,233.39	1,603.52
tblVehicleEF	MH	60.21	19.03
tblVehicleEF	MH	1.48	1.54
tblVehicleEF	MH	0.87	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004
tblVehicleEF	MH	3.50	0.28

tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.0200e-004	1.8800e-004
tblVehicleEF	MH	3.50	0.28
tblVehicleEF	MH	0.11	0.09
tblVehicleEF	MH	0.89	0.07
tblVehicleEF	MH	0.18	0.12
tblVehicleEF	MH	0.02	1.48
tblVehicleEF	MH	0.38	0.10
tblVehicleEF	MH	0.04	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.62	1.38
tblVehicleEF	MH	7.31	2.51
tblVehicleEF	MH	1,233.39	1,603.32
tblVehicleEF	MH	60.21	19.87
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tblVehicleEF	MH	1.00	0.27
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.2010e-003	2.7500e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.1050e-003	2.5300e-004

tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.40	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.2900e-004	1.9700e-004
tblVehicleEF	MH	0.38	0.03
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.09	7.5280e-003
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tblVehicleEF	MH	0.03	1.60
tblVehicleEF	MH	0.44	0.12
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tblVehicleEF	MHD	7.5850e-003	6.6210e-003
tblVehicleEF	MHD	0.06	5.3430e-003
tblVehicleEF	MHD	0.41	5.23
tblVehicleEF	MHD	0.52	0.57
tblVehicleEF	MHD	6.57	0.64
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tblVehicleEF	MHD	1,210.28	1,161.69
tblVehicleEF	MHD	57.55	5.26
tblVehicleEF	MHD	0.76	13.01
tblVehicleEF	MHD	1.79	2.35
tblVehicleEF	MHD	11.25	1.48
tblVehicleEF	MHD	3.8380e-003	0.03

tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.6720e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.28
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.40	0.03
tblVehicleEF	MHD	1.4180e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.9100e-004	5.2000e-005
tblVehicleEF	MHD	1.5080e-003	7.9720e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.36
tblVehicleEF	MHD	6.3200e-004	3.2660e-003
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.7620e-003	6.7130e-003
tblVehicleEF	MHD	0.05	5.0400e-003
tblVehicleEF	MHD	0.29	4.38
tblVehicleEF	MHD	0.53	0.58

tblVehicleEF	MHD	6.05	0.59
tblVehicleEF	MHD	156.25	1,453.84
tblVehicleEF	MHD	1,210.28	1,161.71
tblVehicleEF	MHD	57.55	5.18
tblVehicleEF	MHD	0.78	13.17
tblVehicleEF	MHD	1.67	2.20
tblVehicleEF	MHD	11.19	1.47
tblVehicleEF	MHD	3.2360e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	3.0960e-003	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.03	0.27
tblVehicleEF	MHD	1.6400e-003	8.5880e-003
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.37	0.03
tblVehicleEF	MHD	1.5010e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	6.8200e-004	5.1000e-005
tblVehicleEF	MHD	3.9020e-003	0.02
tblVehicleEF	MHD	0.07	0.02
tblVehicleEF	MHD	0.04	0.35
tblVehicleEF	MHD	1.6400e-003	8.5880e-003

tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	0.41	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.3890e-003	6.5180e-003
tblVehicleEF	MHD	0.06	5.7170e-003
tblVehicleEF	MHD	0.54	6.16
tblVehicleEF	MHD	0.51	0.56
tblVehicleEF	MHD	7.31	0.71
tblVehicleEF	MHD	135.45	1,386.85
tblVehicleEF	MHD	1,210.28	1,161.68
tblVehicleEF	MHD	57.55	5.38
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tblVehicleEF	MHD	11.33	1.48
tblVehicleEF	MHD	4.6700e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.7800e-004	6.1000e-005
tblVehicleEF	MHD	4.4680e-003	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	7.1500e-004	5.6000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.04	0.29
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.07	0.10
tblVehicleEF	MHD	0.03	0.08

tblVehicleEF	MHD	0.43	0.03
tblVehicleEF	MHD	1.3050e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0300e-004	5.3000e-005
tblVehicleEF	MHD	4.3200e-004	2.2230e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.05	0.38
tblVehicleEF	MHD	1.5900e-004	8.0500e-004
tblVehicleEF	MHD	0.09	0.12
tblVehicleEF	MHD	0.03	0.08
tblVehicleEF	MHD	0.47	0.03
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.29	9.48
tblVehicleEF	OBUS	0.88	1.14
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tblVehicleEF	OBUS	128.59	1,671.65
tblVehicleEF	OBUS	1,355.95	1,492.53
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tblVehicleEF	OBUS	0.61	8.80
tblVehicleEF	OBUS	1.94	2.02
tblVehicleEF	OBUS	2.89	1.20
tblVehicleEF	OBUS	1.3800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.3200e-004	0.02

tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.83
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07
tblVehicleEF	OBUS	1.2390e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.0300e-004	1.1000e-004
tblVehicleEF	OBUS	2.2060e-003	0.03
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.05
tblVehicleEF	OBUS	6.9700e-004	9.1200e-003
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.46	0.08
tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.01
tblVehicleEF	OBUS	0.27	9.20
tblVehicleEF	OBUS	0.90	1.18
tblVehicleEF	OBUS	6.09	1.32
tblVehicleEF	OBUS	135.23	1,670.58
tblVehicleEF	OBUS	1,355.95	1,492.59

tblVehicleEF	OBUS	68.41	10.86
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tblVehicleEF	OBUS	2.82	1.19
tblVehicleEF	OBUS	1.1600e-004	0.01
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.1100e-004	0.01
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
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tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.04	0.85
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.09	0.11
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.39	0.06
tblVehicleEF	OBUS	1.3020e-003	0.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.0700e-004
tblVehicleEF	OBUS	5.6160e-003	0.08
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.06	1.06
tblVehicleEF	OBUS	1.7390e-003	0.02
tblVehicleEF	OBUS	0.11	0.14
tblVehicleEF	OBUS	0.05	0.17
tblVehicleEF	OBUS	0.42	0.07

tblVehicleEF	OBUS	0.01	0.10
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	0.01
tblVehicleEF	OBUS	0.31	9.85
tblVehicleEF	OBUS	0.86	1.11
tblVehicleEF	OBUS	7.61	1.65
tblVehicleEF	OBUS	119.42	1,673.14
tblVehicleEF	OBUS	1,355.95	1,492.47
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tblVehicleEF	OBUS	1.99	2.08
tblVehicleEF	OBUS	2.99	1.21
tblVehicleEF	OBUS	1.6800e-004	0.02
tblVehicleEF	OBUS	8.1910e-003	0.03
tblVehicleEF	OBUS	7.9000e-004	1.1000e-004
tblVehicleEF	OBUS	1.6000e-004	0.02
tblVehicleEF	OBUS	7.8180e-003	0.02
tblVehicleEF	OBUS	7.2700e-004	1.0100e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
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tblVehicleEF	OBUS	0.04	0.81
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
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tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.45	0.07
tblVehicleEF	OBUS	1.1510e-003	0.02
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	8.1700e-004	1.1300e-004
tblVehicleEF	OBUS	7.4300e-004	9.5500e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	1.02
tblVehicleEF	OBUS	2.0300e-004	2.5580e-003
tblVehicleEF	OBUS	0.11	0.13
tblVehicleEF	OBUS	0.06	0.18
tblVehicleEF	OBUS	0.49	0.08
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3810e-003
tblVehicleEF	SBUS	0.07	8.4610e-003
tblVehicleEF	SBUS	6.73	16.57
tblVehicleEF	SBUS	0.65	0.43
tblVehicleEF	SBUS	6.39	1.31
tblVehicleEF	SBUS	1,201.53	3,573.20
tblVehicleEF	SBUS	1,096.07	1,113.09
tblVehicleEF	SBUS	44.67	7.18
tblVehicleEF	SBUS	10.71	40.83
tblVehicleEF	SBUS	4.39	6.66
tblVehicleEF	SBUS	13.82	0.61
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04

tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	0.34	0.05
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.5700e-004	7.1000e-005
tblVehicleEF	SBUS	3.5150e-003	7.0240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.57
tblVehicleEF	SBUS	1.1040e-003	1.7490e-003
tblVehicleEF	SBUS	0.13	0.13
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tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.4430e-003
tblVehicleEF	SBUS	0.05	6.7490e-003
tblVehicleEF	SBUS	6.59	16.09
tblVehicleEF	SBUS	0.67	0.43
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tblVehicleEF	SBUS	1,259.83	3,697.06
tblVehicleEF	SBUS	1,096.07	1,113.10
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tblVehicleEF	SBUS	11.05	41.94
tblVehicleEF	SBUS	4.10	6.22
tblVehicleEF	SBUS	13.78	0.60
tblVehicleEF	SBUS	9.2190e-003	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	8.8200e-003	0.04
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.81
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.08
tblVehicleEF	SBUS	0.27	0.04
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.2100e-004	6.4000e-005
tblVehicleEF	SBUS	8.8850e-003	0.02
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.15	2.56
tblVehicleEF	SBUS	2.7360e-003	4.9080e-003
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.08

tblVehicleEF	SBUS	0.29	0.04
tblVehicleEF	SBUS	0.84	0.38
tblVehicleEF	SBUS	0.01	6.3170e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	6.91	17.24
tblVehicleEF	SBUS	0.64	0.42
tblVehicleEF	SBUS	8.86	1.82
tblVehicleEF	SBUS	1,121.03	3,402.14
tblVehicleEF	SBUS	1,096.07	1,113.08
tblVehicleEF	SBUS	44.67	8.02
tblVehicleEF	SBUS	10.24	39.29
tblVehicleEF	SBUS	4.49	6.79
tblVehicleEF	SBUS	13.86	0.61
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	6.0300e-004	9.9000e-005
tblVehicleEF	SBUS	0.01	0.06
tblVehicleEF	SBUS	2.6920e-003	2.8510e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	5.5500e-004	9.1000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.80	1.82
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.02	0.12

tblVehicleEF	SBUS	0.40	0.06
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	5.9800e-004	7.9000e-005
tblVehicleEF	SBUS	1.2060e-003	1.9510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.16	2.58
tblVehicleEF	SBUS	3.3100e-004	4.7000e-004
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.12
tblVehicleEF	SBUS	0.44	0.06
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.08	0.03
tblVehicleEF	UBUS	8.75	36.91
tblVehicleEF	UBUS	12.13	2.35
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	25.45
tblVehicleEF	UBUS	6.32	0.43
tblVehicleEF	UBUS	13.54	0.22
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004

tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.08	0.13
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5970e-003	2.5200e-004
tblVehicleEF	UBUS	7.1780e-003	4.7150e-003
tblVehicleEF	UBUS	0.10	0.01
tblVehicleEF	UBUS	2.8480e-003	2.0590e-003
tblVehicleEF	UBUS	2.65	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.19	0.14
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.82	36.91
tblVehicleEF	UBUS	9.63	1.88
tblVehicleEF	UBUS	1,890.52	2,058.03
tblVehicleEF	UBUS	137.34	24.65
tblVehicleEF	UBUS	5.87	0.42
tblVehicleEF	UBUS	13.40	0.20
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04

tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	0.53	0.07
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.95	0.11
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.5530e-003	2.4400e-004
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	7.2950e-003	5.5390e-003
tblVehicleEF	UBUS	2.66	4.84
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.04	0.12
tblVehicleEF	UBUS	2.06	4.73
tblVehicleEF	UBUS	0.09	0.03
tblVehicleEF	UBUS	8.69	36.90
tblVehicleEF	UBUS	15.34	2.96
tblVehicleEF	UBUS	1,890.52	2,058.02
tblVehicleEF	UBUS	137.34	26.47
tblVehicleEF	UBUS	6.48	0.44
tblVehicleEF	UBUS	13.69	0.23
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03

tblVehicleEF	UBUS	0.06	2.9520e-003
tblVehicleEF	UBUS	1.1160e-003	1.9900e-004
tblVehicleEF	UBUS	0.22	0.04
tblVehicleEF	UBUS	3.0000e-003	7.1020e-003
tblVehicleEF	UBUS	0.06	2.8060e-003
tblVehicleEF	UBUS	1.0260e-003	1.8300e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	0.52	0.07
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.24	0.15
tblVehicleEF	UBUS	0.01	5.7160e-003
tblVehicleEF	UBUS	1.6530e-003	2.6200e-004
tblVehicleEF	UBUS	2.3740e-003	1.5230e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	9.4300e-004	6.1800e-004
tblVehicleEF	UBUS	2.64	4.84
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.36	0.16

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4850	4.7510	3.5150	0.0111	1.0682	0.1397	1.2079	0.4277	0.1292	0.5569	0.0000	1,016.7815	1,016.7815	0.1253	0.0000	1,019.9138
2022	21.2077	13.6517	12.1058	0.0517	2.9280	0.1433	3.0713	0.7941	0.1349	0.9290	0.0000	4,816.0937	4,816.0937	0.2658	0.0000	4,822.7387
Maximum	**21.2077**	**13.6517**	**12.1058**	**0.0517**	**2.9280**	**0.1433**	**3.0713**	**0.7941**	**0.1349**	**0.9290**	**0.0000**	**4,816.0937**	**4,816.0937**	**0.2658**	**0.0000**	**4,822.7387**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4850	4.7510	3.5150	0.0111	0.6558	0.1397	0.7955	0.2326	0.1292	0.3618	0.0000	1,016.7811	1,016.7811	0.1253	0.0000	1,019.9134
2022	21.2077	13.6517	12.1058	0.0517	2.7098	0.1433	2.8530	0.7406	0.1349	0.8755	0.0000	4,816.0933	4,816.0933	0.2658	0.0000	4,822.7384
Maximum	**21.2077**	**13.6517**	**12.1058**	**0.0517**	**2.7098**	**0.1433**	**2.8530**	**0.7406**	**0.1349**	**0.8755**	**0.0000**	**4,816.0933**	**4,816.0933**	**0.2658**	**0.0000**	**4,822.7384**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**15.78**	**0.00**	**14.74**	**20.35**	**0.00**	**16.74**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2021**	**8-31-2021**	1.3817	1.3817
2	**9-1-2021**	**11-30-2021**	2.1642	2.1642
3	**12-1-2021**	**2-28-2022**	4.5349	4.5349
4	**3-1-2022**	**5-31-2022**	4.4886	4.4886
5	**6-1-2022**	**8-31-2022**	4.4660	4.4660
6	**9-1-2022**	**9-30-2022**	1.4563	1.4563
		Highest	4.5349	4.5349

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	18.4295	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4,135.8904	4,135.8904	0.3497	0.0724	4,166.1921
Mobile	8.3374	16.6773	50.3377	0.1270	10.8467	0.1295	10.9763	2.9033	0.1219	3.0253	0.0000	11,898.3839	11,898.3839	0.7869	0.0000	11,918.0556
Waste						0.0000	0.0000		0.0000	0.0000	1,055.5165	0.0000	1,055.5165	62.3792	0.0000	2,614.9974
Water						0.0000	0.0000		0.0000	0.0000	338.5783	759.5997	1,098.1780	1.2296	0.7496	1,352.2935
Total	**26.7669**	**16.6781**	**50.4199**	**0.1270**	**10.8467**	**0.1298**	**10.9766**	**2.9033**	**0.1222**	**3.0256**	**1,394.0948**	**16,794.0335**	**18,188.1282**	**64.7458**	**0.8219**	**20,051.7086**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	15.4399	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4,026.2310	4,026.2310	0.3404	0.0704	4,055.7293
Mobile	8.3208	16.5598	49.8403	0.1252	10.6792	0.1278	10.8070	2.8585	0.1203	2.9788	0.0000	11,735.1536	11,735.1536	0.7794	0.0000	11,754.6378
Waste						0.0000	0.0000		0.0000	0.0000	527.7582	0.0000	527.7582	31.1896	0.0000	1,307.4987
Water						0.0000	0.0000		0.0000	0.0000	270.8626	610.1472	881.0098	0.9839	0.5997	1,084.3203
Total	**23.7607**	**16.5606**	**49.9225**	**0.1253**	**10.6792**	**0.1281**	**10.8073**	**2.8585**	**0.1206**	**2.9791**	**798.6209**	**16,371.6912**	**17,170.3121**	**33.2937**	**0.6701**	**18,202.3562**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**11.23**	**0.70**	**0.99**	**1.38**	**1.54**	**1.31**	**1.54**	**1.54**	**1.32**	**1.54**	**42.71**	**2.51**	**5.60**	**48.58**	**18.47**	**9.22**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Site Preparation	Site Preparation	6/29/2021	8/23/2021	5	40	
3	Grading	Grading	8/24/2021	11/15/2021	5	60	
4	Building Construction	Building Construction	11/16/2021	11/1/2022	5	251	
5	Architectural Coating	Architectural Coating	10/1/2022	12/31/2022	5	65	
6	Paving	Paving	11/2/2022	12/15/2022	5	32	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 150

Acres of Paving: 10.3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 6,263,979; Non-Residential Outdoor: 2,087,993; Striped Parking Area: 135,150 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2,673.00	1,054.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	535.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0317	0.3144	0.2157	3.9000e-004		0.0155	0.0155		0.0144	0.0144	0.0000	34.0008	34.0008	9.5700e-003	0.0000	34.2400
Total	**0.0317**	**0.3144**	**0.2157**	**3.9000e-004**		**0.0155**	**0.0155**		**0.0144**	**0.0144**	**0.0000**	**34.0008**	**34.0008**	**9.5700e-003**	**0.0000**	**34.2400**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.4000e-004	3.8000e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9429	0.9429	2.0000e-005	0.0000	0.9435
Total	**5.2000e-004**	**3.4000e-004**	**3.8000e-003**	**1.0000e-005**	**1.1000e-003**	**1.0000e-005**	**1.1100e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9429**	**0.9429**	**2.0000e-005**	**0.0000**	**0.9435**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0317	0.3144	0.2157	3.9000e-004		0.0155	0.0155		0.0144	0.0144	0.0000	34.0007	34.0007	9.5700e-003	0.0000	34.2400
Total	**0.0317**	**0.3144**	**0.2157**	**3.9000e-004**		**0.0155**	**0.0155**		**0.0144**	**0.0144**	**0.0000**	**34.0007**	**34.0007**	**9.5700e-003**	**0.0000**	**34.2400**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.4000e-004	3.8000e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.9429	0.9429	2.0000e-005	0.0000	0.9435
Total	**5.2000e-004**	**3.4000e-004**	**3.8000e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9429**	**0.9429**	**2.0000e-005**	**0.0000**	**0.9435**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0778	0.8099	0.4231	7.6000e-004		0.0409	0.0409		0.0376	0.0376	0.0000	66.8714	66.8714	0.0216	0.0000	67.4121
Total	**0.0778**	**0.8099**	**0.4231**	**7.6000e-004**	**0.3613**	**0.0409**	**0.4022**	**0.1986**	**0.0376**	**0.2362**	**0.0000**	**66.8714**	**66.8714**	**0.0216**	**0.0000**	**67.4121**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	8.1000e-004	9.1100e-003	3.0000e-005	2.6400e-003	2.0000e-005	2.6600e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.2629	2.2629	6.0000e-005	0.0000	2.2644
Total	**1.2500e-003**	**8.1000e-004**	**9.1100e-003**	**3.0000e-005**	**2.6400e-003**	**2.0000e-005**	**2.6600e-003**	**7.0000e-004**	**2.0000e-005**	**7.2000e-004**	**0.0000**	**2.2629**	**2.2629**	**6.0000e-005**	**0.0000**	**2.2644**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1409	0.0000	0.1409	0.0775	0.0000	0.0775	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0778	0.8099	0.4231	7.6000e-004		0.0409	0.0409		0.0376	0.0376	0.0000	66.8714	66.8714	0.0216	0.0000	67.4120
Total	**0.0778**	**0.8099**	**0.4231**	**7.6000e-004**	**0.1409**	**0.0409**	**0.1818**	**0.0775**	**0.0376**	**0.1151**	**0.0000**	**66.8714**	**66.8714**	**0.0216**	**0.0000**	**67.4120**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	8.1000e-004	9.1100e-003	3.0000e-005	2.4400e-003	2.0000e-005	2.4600e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2629	2.2629	6.0000e-005	0.0000	2.2644
Total	**1.2500e-003**	**8.1000e-004**	**9.1100e-003**	**3.0000e-005**	**2.4400e-003**	**2.0000e-005**	**2.4600e-003**	**6.5000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.2629**	**2.2629**	**6.0000e-005**	**0.0000**	**2.2644**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2602	0.0000	0.2602	0.1079	0.0000	0.1079	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1257	1.3920	0.9264	1.8600e-003		0.0596	0.0596		0.0548	0.0548	0.0000	163.4849	163.4849	0.0529	0.0000	164.8068
Total	**0.1257**	**1.3920**	**0.9264**	**1.8600e-003**	**0.2602**	**0.0596**	**0.3198**	**0.1079**	**0.0548**	**0.1627**	**0.0000**	**163.4849**	**163.4849**	**0.0529**	**0.0000**	**164.8068**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0800e-003	1.3600e-003	0.0152	4.0000e-005	4.4100e-003	3.0000e-005	4.4400e-003	1.1700e-003	3.0000e-005	1.2000e-003	0.0000	3.7715	3.7715	1.0000e-004	0.0000	3.7740
Total	**2.0800e-003**	**1.3600e-003**	**0.0152**	**4.0000e-005**	**4.4100e-003**	**3.0000e-005**	**4.4400e-003**	**1.1700e-003**	**3.0000e-005**	**1.2000e-003**	**0.0000**	**3.7715**	**3.7715**	**1.0000e-004**	**0.0000**	**3.7740**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1015	0.0000	0.1015	0.0421	0.0000	0.0421	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1257	1.3920	0.9264	1.8600e-003		0.0596	0.0596		0.0548	0.0548	0.0000	163.4848	163.4848	0.0529	0.0000	164.8066
Total	**0.1257**	**1.3920**	**0.9264**	**1.8600e-003**	**0.1015**	**0.0596**	**0.1610**	**0.0421**	**0.0548**	**0.0969**	**0.0000**	**163.4848**	**163.4848**	**0.0529**	**0.0000**	**164.8066**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0800e-003	1.3600e-003	0.0152	4.0000e-005	4.0600e-003	3.0000e-005	4.0900e-003	1.0900e-003	3.0000e-005	1.1200e-003	0.0000	3.7715	3.7715	1.0000e-004	0.0000	3.7740
Total	**2.0800e-003**	**1.3600e-003**	**0.0152**	**4.0000e-005**	**4.0600e-003**	**3.0000e-005**	**4.0900e-003**	**1.0900e-003**	**3.0000e-005**	**1.1200e-003**	**0.0000**	**3.7715**	**3.7715**	**1.0000e-004**	**0.0000**	**3.7740**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0323	0.2964	0.2818	4.6000e-004		0.0163	0.0163		0.0153	0.0153	0.0000	39.3783	39.3783	9.5000e-003	0.0000	39.6158
Total	**0.0323**	**0.2964**	**0.2818**	**4.6000e-004**		**0.0163**	**0.0163**		**0.0153**	**0.0153**	**0.0000**	**39.3783**	**39.3783**	**9.5000e-003**	**0.0000**	**39.6158**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0564	1.8330	0.4899	4.3700e-003	0.1048	5.0600e-003	0.1098	0.0303	4.8400e-003	0.0351	0.0000	420.4362	420.4362	0.0240	0.0000	421.0372
Worker	0.1574	0.1028	1.1501	3.1600e-003	0.3337	2.3300e-003	0.3361	0.0888	2.1500e-003	0.0909	0.0000	285.6326	285.6326	7.5000e-003	0.0000	285.8200
Total	**0.2137**	**1.9358**	**1.6400**	**7.5300e-003**	**0.4385**	**7.3900e-003**	**0.4459**	**0.1190**	**6.9900e-003**	**0.1260**	**0.0000**	**706.0688**	**706.0688**	**0.0315**	**0.0000**	**706.8572**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0323	0.2964	0.2818	4.6000e-004		0.0163	0.0163		0.0153	0.0153	0.0000	39.3783	39.3783	9.5000e-003	0.0000	39.6158
Total	**0.0323**	**0.2964**	**0.2818**	**4.6000e-004**		**0.0163**	**0.0163**		**0.0153**	**0.0153**	**0.0000**	**39.3783**	**39.3783**	**9.5000e-003**	**0.0000**	**39.6158**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0564	1.8330	0.4899	4.3700e-003	0.0981	5.0600e-003	0.1032	0.0286	4.8400e-003	0.0335	0.0000	420.4362	420.4362	0.0240	0.0000	421.0372
Worker	0.1574	0.1028	1.1501	3.1600e-003	0.3078	2.3300e-003	0.3101	0.0824	2.1500e-003	0.0845	0.0000	285.6326	285.6326	7.5000e-003	0.0000	285.8200
Total	**0.2137**	**1.9358**	**1.6400**	**7.5300e-003**	**0.4059**	**7.3900e-003**	**0.4133**	**0.1110**	**6.9900e-003**	**0.1180**	**0.0000**	**706.0688**	**706.0688**	**0.0315**	**0.0000**	**706.8572**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1851	1.6943	1.7754	2.9200e-003		0.0878	0.0878		0.0826	0.0826	0.0000	251.4219	251.4219	0.0602	0.0000	252.9277
Total	**0.1851**	**1.6943**	**1.7754**	**2.9200e-003**		**0.0878**	**0.0878**		**0.0826**	**0.0826**	**0.0000**	**251.4219**	**251.4219**	**0.0602**	**0.0000**	**252.9277**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3338	11.1077	2.8830	0.0277	0.6685	0.0284	0.6969	0.1932	0.0271	0.2203	0.0000	2,659.785 0	2,659.785 0	0.1491	0.0000	2,663.5112
Worker	0.9385	0.5901	6.7452	0.0195	2.1300	0.0145	2.1445	0.5665	0.0134	0.5799	0.0000	1,757.710 6	1,757.710 6	0.0430	0.0000	1,758.785 7
Total	**1.2723**	**11.6978**	**9.6281**	**0.0471**	**2.7985**	**0.0429**	**2.8414**	**0.7597**	**0.0405**	**0.8002**	**0.0000**	**4,417.495 6**	**4,417.495 6**	**0.1921**	**0.0000**	**4,422.296 9**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1851	1.6943	1.7754	2.9200e-003		0.0878	0.0878		0.0826	0.0826	0.0000	251.4216	251.4216	0.0602	0.0000	252.9274
Total	**0.1851**	**1.6943**	**1.7754**	**2.9200e-003**		**0.0878**	**0.0878**		**0.0826**	**0.0826**	**0.0000**	**251.4216**	**251.4216**	**0.0602**	**0.0000**	**252.9274**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3338	11.1077	2.8830	0.0277	0.6261	0.0284	0.6544	0.1828	0.0271	0.2099	0.0000	2,659.785 0	2,659.785 0	0.1491	0.0000	2,663.5112
Worker	0.9385	0.5901	6.7452	0.0195	1.9643	0.0145	1.9788	0.5259	0.0134	0.5392	0.0000	1,757.710 6	1,757.710 6	0.0430	0.0000	1,758.785 7
Total	**1.2723**	**11.6978**	**9.6281**	**0.0471**	**2.5904**	**0.0429**	**2.6332**	**0.7086**	**0.0405**	**0.7491**	**0.0000**	**4,417.495 6**	**4,417.495 6**	**0.1921**	**0.0000**	**4,422.296 9**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	19.6689					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0458	0.0589	1.0000e-004		2.6600e-003	2.6600e-003		2.6600e-003	2.6600e-003	0.0000	8.2981	8.2981	5.4000e-004	0.0000	8.3116
Total	**19.6756**	**0.0458**	**0.0589**	**1.0000e-004**		**2.6600e-003**	**2.6600e-003**		**2.6600e-003**	**2.6600e-003**	**0.0000**	**8.2981**	**8.2981**	**5.4000e-004**	**0.0000**	**8.3116**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0563	0.0354	0.4044	1.1700e-003	0.1277	8.7000e-004	0.1286	0.0340	8.0000e-004	0.0348	0.0000	105.3794	105.3794	2.5800e-003	0.0000	105.4439
Total	**0.0563**	**0.0354**	**0.4044**	**1.1700e-003**	**0.1277**	**8.7000e-004**	**0.1286**	**0.0340**	**8.0000e-004**	**0.0348**	**0.0000**	**105.3794**	**105.3794**	**2.5800e-003**	**0.0000**	**105.4439**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	19.6689					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0458	0.0589	1.0000e-004		2.6600e-003	2.6600e-003		2.6600e-003	2.6600e-003	0.0000	8.2981	8.2981	5.4000e-004	0.0000	8.3116
Total	**19.6756**	**0.0458**	**0.0589**	**1.0000e-004**		**2.6600e-003**	**2.6600e-003**		**2.6600e-003**	**2.6600e-003**	**0.0000**	**8.2981**	**8.2981**	**5.4000e-004**	**0.0000**	**8.3116**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0563	0.0354	0.4044	1.1700e-003	0.1178	8.7000e-004	0.1186	0.0315	8.0000e-004	0.0323	0.0000	105.3794	105.3794	2.5800e-003	0.0000	105.4439
Total	**0.0563**	**0.0354**	**0.4044**	**1.1700e-003**	**0.1178**	**8.7000e-004**	**0.1186**	**0.0315**	**8.0000e-004**	**0.0323**	**0.0000**	**105.3794**	**105.3794**	**2.5800e-003**	**0.0000**	**105.4439**

3.7 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0177	0.1780	0.2333	3.6000e-004		9.0900e-003	9.0900e-003		8.3600e-003	8.3600e-003	0.0000	32.0441	32.0441	0.0104	0.0000	32.3032
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0177**	**0.1780**	**0.2333**	**3.6000e-004**		**9.0900e-003**	**9.0900e-003**		**8.3600e-003**	**8.3600e-003**	**0.0000**	**32.0441**	**32.0441**	**0.0104**	**0.0000**	**32.3032**

3.7 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	4.9000e-004	5.5800e-003	2.0000e-005	1.7600e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4546	1.4546	4.0000e-005	0.0000	1.4554
Total	**7.8000e-004**	**4.9000e-004**	**5.5800e-003**	**2.0000e-005**	**1.7600e-003**	**1.0000e-005**	**1.7700e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.4546**	**1.4546**	**4.0000e-005**	**0.0000**	**1.4554**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0177	0.1780	0.2333	3.6000e-004		9.0900e-003	9.0900e-003		8.3600e-003	8.3600e-003	0.0000	32.0441	32.0441	0.0104	0.0000	32.3032
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0177**	**0.1780**	**0.2333**	**3.6000e-004**		**9.0900e-003**	**9.0900e-003**		**8.3600e-003**	**8.3600e-003**	**0.0000**	**32.0441**	**32.0441**	**0.0104**	**0.0000**	**32.3032**

3.7 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	4.9000e-004	5.5800e-003	2.0000e-005	1.6300e-003	1.0000e-005	1.6400e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4546	1.4546	4.0000e-005	0.0000	1.4554
Total	**7.8000e-004**	**4.9000e-004**	**5.5800e-003**	**2.0000e-005**	**1.6300e-003**	**1.0000e-005**	**1.6400e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4546**	**1.4546**	**4.0000e-005**	**0.0000**	**1.4554**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement NEV Network

Implement Trip Reduction Program

Employee Vanpool/Shuttle

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.3208	16.5598	49.8403	0.1252	10.6792	0.1278	10.8070	2.8585	0.1203	2.9788	0.0000	11,735.1536	11,735.1536	0.7794	0.0000	11,754.6378
Unmitigated	8.3374	16.6773	50.3377	0.1270	10.8467	0.1295	10.9763	2.9033	0.1219	3.0253	0.0000	11,898.3839	11,898.3839	0.7869	0.0000	11,918.0556

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government (Civic Center)	7,475.02	0.00	0.00	10,064,687	9,885,118
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	6,565.88	6,565.88	6565.88	19,095,605	18,824,754
Total	14,040.90	6,565.88	6,565.88	29,160,292	28,709,872

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government (Civic Center)	10.00	5.00	6.50	75.00	20.00	5.00	50	34	16
Unenclosed Parking with	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	10.00	5.00	6.50	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government (Civic Center)	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unenclosed Parking with Elevator	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865
Unrefrigerated Warehouse-No Rail	0.559527	0.038733	0.206173	0.118029	0.019040	0.005245	0.018552	0.023249	0.002031	0.002054	0.005884	0.000619	0.000865

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	4,026.2310	4,026.2310	0.3404	0.0704	4,055.7293
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	4,135.8904	4,135.8904	0.3497	0.0724	4,166.1921
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government (Civic Center)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government (Civic Center)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government (Civic Center)	4.23549e +006	658.9666	0.0557	0.0115	663.7945
Unenclosed Parking with Elevator	4.36985e +006	679.8708	0.0575	0.0119	684.8519
Unrefrigerated Warehouse-No Rail	1.7978e +007	2,797.053 0	0.2365	0.0489	2,817.545 7
Total		**4,135.890 4**	**0.3497**	**0.0724**	**4,166.192 1**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government (Civic Center)	3.8355e +006	596.7355	0.0505	0.0104	601.1075
Unenclosed Parking with Elevator	4.36985e +006	679.8708	0.0575	0.0119	684.8519
Unrefrigerated Warehouse-No Rail	1.76731e +007	2,749.624 7	0.2325	0.0481	2,769.769 9
Total		**4,026.231 0**	**0.3404**	**0.0704**	**4,055.729 3**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	15.4399	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Unmitigated	18.4295	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.9669					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	16.4549					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6400e-003	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Total	**18.4295**	**7.5000e-004**	**0.0822**	**1.0000e-005**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.1595**	**0.1595**	**4.2000e-004**	**0.0000**	**0.1701**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1967					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	15.2355					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6400e-003	7.5000e-004	0.0822	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.1595	0.1595	4.2000e-004	0.0000	0.1701
Total	**15.4399**	**7.5000e-004**	**0.0822**	**1.0000e-005**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.1595**	**0.1595**	**4.2000e-004**	**0.0000**	**0.1701**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	881.0098	0.9839	0.5997	1,084.320 3
Unmitigated	1,098.178 0	1.2296	0.7496	1,352.293 5

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government (Civic Center)	53.1872 / 32.5986	77.7997	0.0698	0.0420	92.0460
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	903.785 / 0	1,020.3782	1.1598	0.7076	1,260.2476
Total		**1,098.1780**	**1.2296**	**0.7496**	**1,352.2935**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government (Civic Center)	42.5497 / 30.6101	64.7072	0.0560	0.0336	76.1223
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	723.028 / 0	816.3026	0.9279	0.5661	1,008.1981
Total		**881.0098**	**0.9839**	**0.5997**	**1,084.3203**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	527.7582	31.1896	0.0000	1,307.4987
Unmitigated	1,055.5165	62.3792	0.0000	2,614.9974

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government (Civic Center)	1526.06	309.7764	18.3073	0.0000	767.4579
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	3673.76	745.7401	44.0720	0.0000	1,847.5395
Total		**1,055.5165**	**62.3792**	**0.0000**	**2,614.9974**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government (Civic Center)	763.03	154.8882	9.1536	0.0000	383.7290
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1836.88	372.8700	22.0360	0.0000	923.7697
Total		**527.7582**	**31.1896**	**0.0000**	**1,307.4987**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Summary of VMT Analysis for the Airport Master Plan Update	
Metric	**VMT/ VMT per Passenger/ VMT per Employee**
Additional VMT per Passenger[8]	0.15
Additional Passengers	15,872
VMT for Additional Passengers	2,339
Average Bay Area Airport VMT per Passenger	105.00
VMT Reduction for Recaptured Passengers	-64.20
Total Passengers Recaptured	7,936
Total VMT Reduction for Recaptured Passengers	-509,500
VMT per Employee Increase Compared to SACOG Region	10
Total Additional Employees	2,020
Total Additional Employee Related VMT	20,220
Net Change in VMT due to Proposed Airport Master Plan Update	-486,941

[8] Difference between values documented Table 2.

Master Plan Emissions Calculations

	ROG	NO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	CH_4 (CO_2e)	N_2O	N_2O (CO_2e)	CO_2e
Emissions Rate (g/mi)	0.0157975	0.028041376	0.000778321	0.00072325	205.2429205	0.002543233		0.00449938		
Emission Reduction (g)	-7,692.45	-13,654.50	-379.00	-352.18	-99,941,192.94	-1,238.40		-2,190.93		
Emission Reduction (lbs/day)	-16.96	-30.10	-0.84	-0.78	-220,332.65	-2.73	-68.26	-4.83	-1,439.39	
Emission Reduction (tons/year)	-2.89	-5.13	-0.14	-0.13	-37566.72	-0.47	-11.64	-0.82	-245.42	
				MT	-3.41E+04	-4.22E-01	-10.56	-7.47E-01	-222.64	-34,313

Emissions Calculations by Air District - Net Change due to Master Plan Update

SMAQMD VMT:	1,988			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.0157975	0.028041376	0.000778321	0.00072325
Emissions (g)	31.41	55.75	1.55	1.44
Emissions (lbs/day)	0.07	0.12	0.00	0.00
Emissions (tons/year)	0.01	0.02	0.00	0.00

Yolo-Solano AQMD VMT:	-49,462			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.019607573	0.031002219	0.00080377	0.000747732
Emission Reduction (g)	-969.83	-1,533.43	-39.76	-36.98
Emission Reduction (lbs/day)	-2.14	-3.38	-0.09	-0.08
Emission Reduction (tons/year)	-0.36	-0.58	-0.01	-0.01

Feather River AQMD VMT:	7,927			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.013792261	0.032511664	0.000825003	0.000768733
Emissions (g)	109.33	257.72	6.54	6.09
Emissions (lbs/day)	0.24	0.57	0.01	0.01
Emissions (tons/year)	0.04	0.10	0.00	0.00

Placer County APCD VMT:	3,710			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.017410112	0.031775702	0.000820729	0.000764873
Emissions (g)	64.59	117.89	3.04	2.84
Emissions (lbs/day)	0.14	0.26	0.01	0.01
Emissions (tons/year)	0.02	0.04	0.00	0.00

El Dorado County AQMD VMT:	544			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Emissions Rate (g/mi)	0.016047036	0.036896057	0.00091057	0.000848227
Emissions (g)	8.73	20.07	0.50	0.46
Emissions (lbs/day)	0.02	0.04	0.00	0.00
Emissions (tons/year)	0.00	0.01	0.00	0.00

NO-1

Noise Assessment

Acoustical Assessment
SMF Cargo Facility Project and Master Plan Update
Sacramento County, California

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LIST OF ABBREVIATED TERMS

ADT	average daily traffic
dBA	A-weighted sound level
CEQA	California Environmental Quality Act
CNEL	community equivalent noise level
L_{dn}	day-night noise level
dB	decibel
L_{eq}	equivalent noise level
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	heating ventilation and air conditioning
Hz	hertz
in/sec	inches per second
L_{max}	maximum noise level
µPa	micropascals
L_{min}	minimum noise level
OAK	Oakland International Airport
PPV	peak particle velocity
RMS	root mean square
SFO	San Francisco International Airport
SJC	San Jose International Airport
SMF	Sacramento International Airport
VdB	vibration velocity level

1 INTRODUCTION

This report documents the results of an Acoustical Assessment completed for the Sacramento International Airport Cargo Facility Project (Project) as part of the 2020 Sacramento Airport Master Plan Update. The purpose of this Acoustical Assessment is to evaluate the potential construction and operational noise and vibration levels associated with the Project and determine the level of impact the Project would have on the environment.

1.1 Background

Sacramento International Airport Master Plan EIR – 2007

The Sacramento International Airport (SMF) Master Plan lays out the expected development of the airport to the year 2020. In 2007, the Sacramento International Airport Master Plan EIR was prepared to evaluate the environmental impacts that may result from implementing the SMF Master Plan and presents conclusions on the significance of those impacts. The *Sacramento International Airport Cargo Facility Project Draft EIR* (2007) (SMF Draft EIR) addressed future development of the airport to the year 2020 in two phases. The first phase (Phase I) would occur from 2007 through 2013 and the second phase (Phase II) would occur from 2014 through 2020. The proposed Project is planned for the second phase of the Master Plan to expand its apron and construct three air cargo buildings. The Master Plan had also included conceptual plans for possible development at SMF in a third phase occurring beyond 2020. The Federal Aviation Administration recommends an airport master plan be updated every ten years, or when there is a large-scale shift proposed to airside or landside facilities. Currently, the SMF is preparing an update to the Master Plan as a continuation effort started by the Airport in 2016.

1.2 Project Location

The SMF is located west of the City of Sacramento and east of the Sacramento River, in Sacramento County. The airport is bordered by Interstate 5 (I-5) to the south and Power Line Road to the east. The Project site is located at SMF on the north side of the airport. The Project site is currently vacant with annual grassland and is bounded by West Elverta Road to the north, Earheart Drive to the east, Delta Road to the south, and an aircraft taxiway to the west. The 77.7-acre site is located approximately two mile north of the I-5 and three miles west of the State Route (SR) 99; refer to **Exhibit 1: Regional Location Map** and **Exhibit 2: Project Vicinity Map**.

1.3 Project Description

The Project is proposing to construct a cargo facility comprised of three buildings (e.g. a sortation building, a ground crew building, and an equipment maintenance building), associated parking, and a taxilane on the north side of the Sacramento International Airport on 77.7 acres. As shown in the **Exhibit 3: Conceptual Site Plan**, the cargo facility would include three buildings for a total of 950,000 square feet, 13 aircraft parking spaces, 1,314 automobile parking spaces, and 343 trailer parking spaces. Vehicular access to the project site would be provided on Earheart Drive from West Elverta Road. Access to the project site from Earheart Drive and West Elverta Road is proposed to be signalized.

Cargo Facility

The proposed Project consists of three buildings for a total of 950,000 square feet; refer to **Table 1: Building Summary**. The sortation building would include 900,000 square feet of warehouse area. The ground crew building would include 25,000 square feet of warehouse area. The maintenance building would include 25,000 square feet of warehouse area.

Table 1: Building Summary

Building	Total Building (sf)	Parking	
		Automobiles	Truck/Trailer
Sortation	900,000	1,314	343 Trailers 141 Trucks
Ground Crew	25,000		
Maintenance	25,000		
Total	**950,000**		

Site Access

Vehicular access to the project site would be provided on two driveways on Earheart Drive. Vehicles would enter Earheart Drive from the northernmost entrance and exit the project site from the southernmost entrance. Access to the project site from Earheart Drive would be right-in the northernmost entrance and a left-out in the southernmost exit. The driveway entrance and exits would be unsignalized. Access to the project site from Earheart Drive and West Elverta Road is proposed to be signalized.

Parking

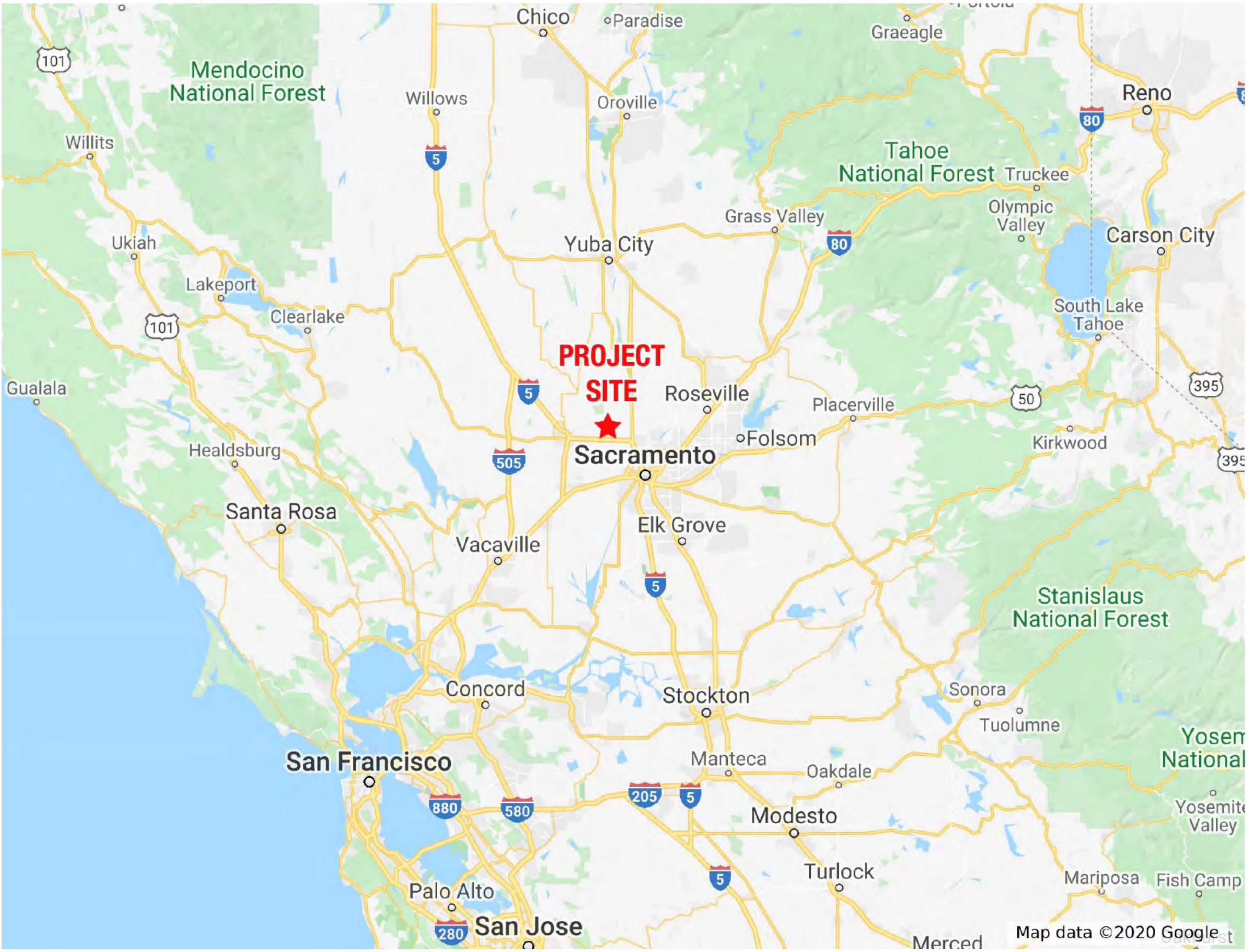
The Project provides 1,314 automobile parking spaces. Along with, 13 aircraft parking spaces, 141 truck loading docks, and 343 trailer parking spaces.

Airport Master Plan Update

The SMF Master Plan Update involves airport expansion to accommodate growth over the next 20 years. Currently, more than 2.1 million domestic passengers and more than 1.6 million international passengers travel to airports outside of the Sacramento region to take flights.[1] Primarily, these passengers use airports in the Bay Area with San Francisco International Airport (SFO), Oakland International Airport (OAK), and San Jose International Airport (SJC) capturing the majority of the passenger service. Accordingly, if the Airport does not expand and/or provide additional passenger service that meets the need of traveler, these longer vehicular trips to Bay Area airports would be assumed to continue or even expand as the demand for service naturally increases with population growth over time. The provision of additional gates to serve this unmet local demand is a primary catalyst of the Proposed Project.

[1] Campbell-Hill Aviation Group, LLC., *SMF Catchment Area Analysis,* April 2020 and Kimley-Horn, VMT Assessment & Local Access, Safety, and Circulation Study, July 2020.

Exhibit 1: Regional Location Map

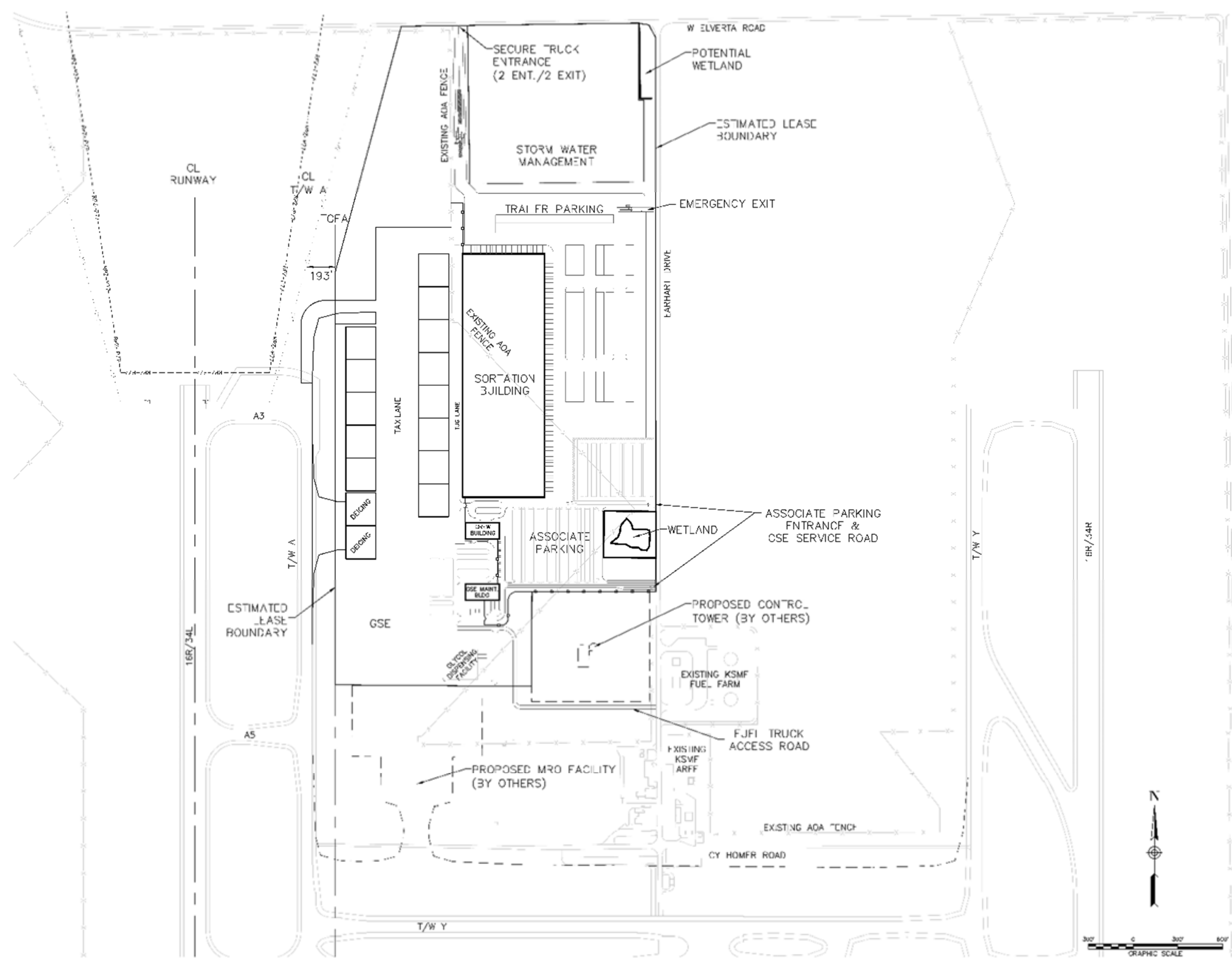


Source: Google Maps, 2020

Exhibit 2: Project Vicinity Map

Source: Google Maps, 2020

Exhibit 3: Conceptual Site Plan



Source: Gresham Smith, 2019

2 ACOUSTIC FUNDAMENTALS

2.1 Sound and Environmental Noise

Acoustics is the science of sound. Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a medium (e.g. air) to human (or animal) ear. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or hertz (Hz).

Noise is defined as loud, unexpected, or annoying sound. In acoustics, the fundamental model consists of a noise source, a receptor, and the propagation path between the two. The loudness of the noise source, obstructions, or atmospheric factors affecting the propagation path, determine the perceived sound level and noise characteristics at the receptor. Acoustics deal primarily with the propagation and control of sound. A typical noise environment consists of a base of steady background noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to continuous noise from traffic on a major highway. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a large range of numbers. To avoid this, the decibel (dB) scale was devised. The dB scale uses the hearing threshold of 20 micropascals (μPa) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels correspond closely to human perception of relative loudness. **Table 2: Typical Noise Levels** provides typical noise levels.

Table 2: Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	– 110 –	Rock Band
Jet fly-over at 1,000 feet		
	– 100 –	
Gas lawnmower at 3 feet		
	– 90 –	
Diesel truck at 50 feet at 50 miles per hour		Food blender at 3 feet
	– 80 –	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	**– 70 –**	Vacuum cleaner at 10 feet
Commercial area		Normal Speech at 3 feet
Heavy traffic at 300 feet	**– 60 –**	
		Large business office
Quiet urban daytime	**– 50 –**	Dishwasher in next room
Quiet urban nighttime	**– 40 –**	Theater, large conference room (background)
Quiet suburban nighttime		
	– 30 –	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	– 20 –	
		Broadcast/recording studio
	– 10 –	
Lowest threshold of human hearing	**– 0 –**	Lowest threshold of human hearing

Source: California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

Noise Descriptors

The dB scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The equivalent noise level (L_{eq}) is the average noise level averaged over the measurement period, while the day-night noise level (L_{dn}) and Community Equivalent Noise Level (CNEL) are measures of energy average during a 24-hour period, with dB weighted sound levels from 7:00 p.m. to 7:00 a.m. Most commonly, environmental sounds are described in terms of L_{eq} that has the same acoustical energy as the summation of all the time-varying events. Each is applicable to this analysis and defined in **Table 3: Definitions of Acoustical Terms**.

Table 3: Definitions of Acoustical Terms	
Term	**Definitions**
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in µPa (or 20 micronewtons per square meter), where 1 pascals is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in dB as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g. 20 µPa). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in dB as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level (L_{eq})	The average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
Maximum Noise Level (L_{max}) Minimum Noise Level (L_{min})	The maximum and minimum dBA during the measurement period.
Exceeded Noise Levels (L_{01}, L_{10}, L_{50}, L_{90})	The dBA values that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day-Night Noise Level (L_{dn})	A 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity at nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
Community Noise Equivalent Level (CNEL)	A 24-hour average L_{eq} with a 5 dBA weighting during the hours of 7:00 a.m. to 10:00 p.m. and a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

The A-weighted decibel (dBA) sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source.

A-Weighted Decibels

The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by dBA values. There is a strong correlation between dBA and the way the human ear perceives sound. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of dBA, but are expressed as dB, unless otherwise noted.

Addition of Decibels

The dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic dB is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. [2] When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions.[3] Under the dB scale, three sources of equal loudness together would produce an increase of 5 dBA.

Sound Propagation and Attenuation

Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics.[4] No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm

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2 FHWA, *Noise Fundamentals,* 2017. Available at: https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm

3 Ibid.

4 California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, Page 2-29, September 2013.

reduces noise levels by 5 to 10 dBA.[5] The way older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.[6]

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA.[7] Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA, the following relationships should be noted:[8]

- Except in carefully controlled laboratory experiments, a 1-dBA change cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A minimum 5-dBA change is required before any noticeable change in community response would be expected. A 5-dBA increase is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on People

Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise. The Occupational Safety and Health Administration has a noise exposure standard that is set at the noise threshold where

5 James P. Cowan, *Handbook of Environmental Acoustics,* 1994.
6 HUD, *Noise Guidebook*, 2009. Available at: https://www.hudexchange.info/resource/313/hud-noise-guidebook/
7 Compiled from James P. Cowan, *Handbook of Environmental Acoustics,* 1994 and Cyril M. Harris, Handbook of Noise Control, 1979.
8 Compiled from California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013, and FHWA, *Noise Fundamentals,* 2017.

hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. A noise level of about 55 dBA L_{dn} is the threshold at which a substantial percentage of people begin to report annoyance[9].

2.2 Groundborne Vibration

Sources of groundborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g. factory machinery) or transient (e.g. explosions). Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Table 4: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations, displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

[9] Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

Table 4: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations

Peak Particle Velocity (in/sec)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006-0.019	64-74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Recommended upper level to which ruins and ancient monuments should be subjected
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Virtually no risk of architectural damage to normal buildings
0.2	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to normal dwellings
0.4-0.6	98-104	Vibrations considered unpleasant by people that are subjected to continuous vibrations and unacceptable to some people walking on bridges	Architectural damage and possibly minor structural damage

Source: California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2013.

3 REGULATORY SETTING

To limit population exposure to physically or psychologically damaging as well as intrusive noise levels, the Federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

3.1 State of California

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Title 24 – Building Code

The State's noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new multi-family residential buildings, the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.2 Local

County of Sacramento General Plan

The County of Sacramento General Plan is a roadmap that encompasses the hopes, aspirations, values, and dreams of the community. The County of Sacramento General Plan specifies exterior noise guidelines for land uses in the Noise Element section. The County requires that new developments be designed to meet these guidelines. Noise compatibility can be achieved by avoiding the location of conflicting land uses adjacent to one another, incorporating buffers and noise control techniques including setbacks, landscaping, building transitions, site design, and building construction techniques. Selection of the appropriate noise control technique would vary depending on the level of noise that needs to be reduced as well as the location and intended land use. General Plan policies that directly address reducing and avoiding noise or vibration impacts include the following:

Goal 1: To protect the existing and future citizens of Sacramento County from the harmful effects of exposure to excessive noise. More specifically, to protect existing noise-sensitive land uses from new uses that would generate noise levels which are incompatible with those uses, and to discourage new noise sensitive land uses from being developed near sources of high noise levels.

GOAL 2 To protect the economic base of Sacramento County by preventing the encroachment of noise-sensitive land uses into areas affected by existing noise-producing uses. More specifically, to recognize that noise is an inherent by-product of many land uses and to prevent new noise-sensitive land uses from being developed in areas affected by existing noise-producing uses.

GOAL 3 To provide the County with flexibility in the development of infill properties which may be located in elevated noise environments.

GOAL 4 To provide sufficient noise exposure information so that existing and potential future noise impacts may be effectively addressed in the land use planning and project review processes.

NO-1. Where the noise level are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance.

NO-2. Proposals for new development within Sacramento County which may be affected by aircraft noise shall be evaluated relative to Land Use Compatibility for Aircraft Noise, except in the following case. Development proposals which may be affected by aircraft noise from Sacramento International Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Sacramento International Airport (refer to **Table 5: Sacramento International Airport Guidelines for Land Use Planning**).

NO-5. Where the noise level standards are predicted to be exceeded at a proposed noise-sensitive area due to existing non-transportation noise sources, appropriate noise mitigation measures shall be included in the project design.

NO-6. Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not exceed the interior and exterior noise level standards at existing noise-sensitive areas in the project vicinity.

NO-7. The “last use there” shall be responsible for noise mitigation. However, if a noise generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the Table 2 standards at the property line of the generating use in anticipation of the future neighboring development.

NO-8. Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

NO-12. All noise analyses prepared to determine compliance with the noise level standards contained within this Noise Element shall be prepared in accordance with county standards.

NO-13. Where noise mitigation measures are required to satisfy the noise level standards of this Noise Element, emphasis shall be placed on the use of setbacks and site design to the extent feasible, prior to consideration of the use of noise barriers.

Table 5: Sacramento International Airport Guidelines for Land Use Planning

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	50 – 60	60 – 65	75 – 70	70 – 75
Residential-Single and Multi-Family	Conditional	Incompatible	Incompatible	Incompatible
Residential- Short Term Housing	Normally Compatible	Conditional	Conditional	Incompatible
Residential- Long Term Housing	Normally Compatible	Conditional	Incompatible	Incompatible
Community Commercial	Normally Compatible	Normally Compatible	Conditional	Conditional
General Commercial	Normally Compatible	Normally Compatible	Conditional	Conditional
Business Park and Offices	Normally Compatible	Normally Compatible	Conditional	Conditional
Heavy Industrial	Normally Compatible	Normally Compatible	Normally Compatible	Normally Compatible
Light Industrial	Normally Compatible	Normally Compatible	Conditional	Conditional
School Facility	Conditional	Conditional	Incompatible	Incompatible
Open Space - Recreation- Parks/Playgrounds	Normally Compatible	Conditional	Incompatible	Incompatible
Open Space - Resources - Athletic Fields	Normally Compatible	Normally Compatible	Conditional	Incompatible

Source: County of Sacramento, *International Airport Land Use Plan,* December 12, 2013.

County of Sacramento Code of Ordinances

A noise ordinance is intended to control unnecessary, excessive, and annoying sounds from stationary, non-transportation noise sources. Noise ordinance requirements are not applicable to mobile noise sources such as heavy trucks traveling on public roadways. Federal and State laws preempt control of mobile noise sources on public roads. Noise ordinance standards generally apply to industrial and commercial noise sources, as well as parks and schools affecting residential areas.

The Project would be subject to the limitations imposed by the County regarding construction noise. Sacramento County Code section 6.68.090(e) states that noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, are exempt from maximum noise level requirements. The said activities must not take place between the hours of 8:00 p.m. and 6:00 a.m. on weekdays and Friday commencing at 8:00 p.m. through and including 7:00 a.m. on Saturday;

Saturdays commencing at 8:00 p.m. through and including 7:00 a.m. on the next following Sunday and on Sunday after the hour of 8:00 p.m.

When an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after 8:00 p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner.

4 EXISTING CONDITIONS

4.1 Existing Noise Source

The County of Sacramento is impacted by various noise sources. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities. As the project site is within SMF, aircraft is also a major noise source. Other sources of noise are the various land uses (i.e., residential, commercial, institutional, and recreational and parks activities) throughout the County that generate stationary-source noise. The project is located within the grounds of the Sacramento International Airport.

Mobile Sources

Existing roadway noise levels were calculated for the roadway segments in the project vicinity. This task was accomplished using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) and existing traffic volumes from the project traffic analysis (prepared by Kimley-Horn, 2020). The noise prediction model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (also referred to as energy rates) used in the FHWA model have been modified to reflect average vehicle noise rates identified for California by the California Department of Transportation (Caltrans). The Caltrans data indicates that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels.[10] The average daily noise levels along roadway segments in proximity to the project site are included in **Table 6: Existing Traffic Noise Levels**.

Table 6: Existing Traffic Noise Levels

Roadway Segment	ADT	dBA CNEL 100 Feet from Roadway Centerline
Elverta Road, Garden Highway to Earhart Drive	563	49.6
Elverta Road, Earhart Drive to Power Line Road	876	51.5
Elverta Road, Power Line Road to Metro Air Parkway	1,232	53.0
Elverta Road, Metro Air Parkway to Lone Tree Road	1,812	54.7
Elverta Road, Lone Tree Road to SR-99	1,790	54.7
Power Line Road, Elverta Road to Road A	539	49.4
Power Line Road, Road A to Road D	539	49.3
Power Line Road, Road D to Skyking Road	539	49.2
Power Line Road, Skyking Road to Elkhorn Boulevard	1,023	51.9
Metro Air Parkway, Elverta Road to Road A	602	49.7
Metro Air Parkway, Road A to Road D	602	49.5
Metro Air Parkway, Road D to Skyking Road	602	49.4
Metro Air Parkway, Skyking Road to Elkhorn Boulevard	1,710	53.8

ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Based on traffic data within the *VMT Assessment & Local Access, Safety, and Circulation Study*, prepared by Kimley-Horn, 2020. Refer to **Appendix A** for traffic noise modeling assumptions and results.

As depicted in **Table 6**, the existing traffic-generated noise level on Project-vicinity roadways currently ranges from 49.2 dBA CNEL to 54.7 dBA CNEL 100 feet from the centerline. As previously described, CNEL

[10] California Department of Transportation, *California Vehicle Noise Emission Levels*, 1987.

is 24-hour average noise level with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

Airport and Stationary Noise

The primary sources of stationary noise in the Project vicinity are those associated with the airport and operations of adjacent general industrial uses. The noise associated with these sources may represent a single-event noise occurrence or short-term noise. Other existing noise in SMF's vicinity is produced by vehicular traffic, agricultural equipment, and aircraft overflights from other airports in the region. Interstate 5 (I-5) is a major highway in close proximity to the airport; additional vehicle traffic exists on Garden Highway, Power Line Road, Bayou Way, and Elverta Road. The main land use in SMF's vicinity is agricultural. Agricultural land uses produce noise from the use of various types of equipment.

4.2 Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Noise sensitive uses typically include residences, hospitals, schools, childcare facilities, and places of assembly. Vibration sensitive receivers are generally similar to noise sensitive receivers but may also include businesses, such as research facilities and laboratories that use vibration-sensitive equipment. Sensitive receptors near the Project site consist mostly of single-family residences. Sensitive land uses nearest to the Project are shown in **Table 7: Sensitive Receptors**.

Table 7: Sensitive Receptors

Receptor Description	Distance and Direction from the Project
Single-Family Residential Community	3.24 miles to the southeast
Single-Family Residential Community	3.31 miles to the southeast
Golden Poppy Park	3.44 miles to the southeast
Byers Preschool	3.45 miles to the southeast
Westlake Charter School	4.15 miles to the south
Natomas Pacific Pathways Prep High School	4.19 miles to the south
Source: Google Earth	

5 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 CEQA Thresholds

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains analysis guidelines related to noise impacts. These guidelines have been used by the County to develop thresholds of significance for this analysis. A project would create a significant environmental impact if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generate excessive groundborne vibration or groundborne noise levels; and
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels.

Thresholds

Construction Noise

The Project would be subject to the limitations imposed by the County regarding construction noise. Sacramento County Code section 6.68.090(e) states that noise associated with construction, repair, remodeling, demolition, paving or grading are exempt from maximum noise level requirements. Construction must not take place between the hours of 8:00 p.m. and 6:00 a.m. on weekdays and Friday commencing at 8:00 p.m. through and including 7:00 a.m. on Saturday; Saturdays commencing at 8:00 p.m. through and including 7:00 a.m. on the next following Sunday and on Sunday after the hour of 8:00 p.m.

Operational Stationary Noise

Pursuant to Sacramento County Code section 6.68.070, the Project would cause ambient noise levels to increase by 5 dBA or more and the resulting noise falls on a noise-sensitive land use within an area categorized as either “clearly compatible” or “normally compatible” (see **Table 5**).

Operational Traffic Noise

A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Sacramento County has established some standards for roadway noise ranging from 1.5 dB to 5 dB, depending upon the existing noise environment. The substantial increase would result in an impact if the resulting total noise level would exceed the “normally acceptable” category for a given land use. Based upon the General Plan Noise Element, when pre-project traffic noise levels are less than 60 dB Ldn, a 5+ dB increase is required before the change is significant. When pre-project noise levels are between 60 dB and 65 dB Ldn, an increase of 3+ dB is required before the change is significant. When pre-project noise levels are above 65 dB Ldn, an increase of 1.5+ dB is required before the change is considered significant.

Vibration

The City currently does not have a significance threshold to assess vibration impacts. Thus, the FTA guidelines set forth in FTA's Transit Noise and Vibration Impact Assessment Manual are used to evaluate potential impacts related to vibration.

5.2 Methodology

Construction

Construction noise levels were based on typical noise levels generated by construction equipment published by the Federal Transit Administration (FTA) and FHWA. Construction noise is assessed in dBA Leq. This unit is appropriate because Leq can be used to describe noise level from operation of each piece of equipment separately, and levels can be combined to represent the noise level from all equipment operating during a given period.

Reference noise levels are used to estimate operational noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

Operations

The analysis of the Existing and With Project noise environments is based on noise prediction modeling and empirical observations. Reference noise level data are used to estimate the Project operational noise impacts from stationary sources. Noise levels are collected from field noise measurements and other published sources from similar types of activities are used to estimate noise levels expected with the Project's stationary sources. The reference noise levels are used to represent a worst-case noise environment as noise level from stationary sources can vary throughout the day. Operational noise is evaluated based on the standards within the County's Noise Ordinance and General Plan. The Without Project and With Project traffic noise levels in the Project vicinity were calculated using the FHWA Highway Noise Prediction Model (FHWA-RD-77-108).

Vibration

Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne vibration levels associated with construction equipment, obtained from FTA published data for construction equipment. Potential groundborne vibration impacts related to building/structure damage and interference with sensitive existing operations were evaluated, considering the distance from construction activities to nearby land uses and typically applied criteria.

6 POTENTIAL IMPACTS AND MITIGATION

6.1 Acoustical Impacts

Threshold 6.1	**Would the Project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Summary of the 2007 SMF Master Plan Impacts: The construction analysis determined that no noise-sensitive land uses occur within the CNEL 65 dB contour of the airport where construction will take place; therefore, no noise-sensitive receptor impacts were anticipated, and no mitigation measures were recommended. Additionally, as no residences are located within the CNEL 65 dB noise contour with and without the Master Plan area, and operational impacts would be less than significant, and no mitigation measures were recommended.

Cargo Facility Impacts:

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g. land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. No noise sensitive receptors are within 3 miles of the project area. Additionally, construction activities would occur throughout the Project site and would not be concentrated at a single point.

Construction activities would include site preparation, grading, building construction, paving, and architectural coating. Such activities would require graders, scrapers, and tractors during site preparation; graders, dozers, and tractors during grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, mixers, tractors, and paving equipment during paving; and air compressors during architectural coating. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment are listed in **Table 8: Typical Construction Noise Levels**.

Table 8: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source	Typical Noise Level (dBA) at 100 feet from Source[1]
Air Compressor	80	74
Backhoe	80	74
Compactor	82	76
Concrete Mixer	85	77
Concrete Pump	82	76
Concrete Vibrator	76	79
Crane, Derrick	88	76
Crane, Mobile	83	70

Table 8: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source	Typical Noise Level (dBA) at 100 feet from Source[1]
Dozer	85	82
Generator	82	77
Grader	85	79
Impact Wrench	85	76
Jack Hammer	88	79
Loader	80	79
Paver	85	82
Pile-driver (Impact)	101	74
Pile-driver (Sonic)	95	79
Pneumatic Tool	85	95
Pump	77	89
Roller	85	79
Saw	76	71
Scraper	85	84
Shovel	82	89
Truck	84	79

[1] Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1+20Log(d_1/d_2)$
dBA_2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

Pursuant to Sacramento County Code section 6.68.090(e), as noted above, construction activities are exempt from the specified noise ordinance standards during the hours of 6:00 a.m. to 8:00 p.m. Monday through Friday, and Saturday and Sunday from 7:00 a.m. to 8:00 p.m. While the County establishes limits to the hours during which construction activity may take place, it does not identify specific noise level limits for construction noise levels. The permitted hours of construction are required in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant impact. However, this analysis conservatively uses the FTA's threshold of 90 dBA Leq to evaluate construction noise impacts.[11]

It is noted that Project area is already within the airport's existing 65 dBA CNEL noise contour. Typically, the loudest pieces of equipment include jack hammers, heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. The highest noise level from these types of equipment is 88 dBA at 50 feet. Noise impacts from Project-related construction activities occurring within or adjacent to the project site would be a function of the noise generated by construction equipment, the location of the equipment, the timing and duration of the noise-generating construction activities, and the relative distance to the noise-sensitive receptors. Construction activities for the proposed Project would generally include site preparation, grading, track construction, and paving. The demolition and grading phases generally have the highest noise levels but the shortest duration of all construction phases.

Demolition and grading typically requires the use of earth-moving equipment, such as graders, scrapers, dozers, tractors, and excavators. Building construction typically involves the use of cranes, forklifts, concrete trucks, pumps, and delivery trucks. Paving typically requires the use of pavers, rollers, mixers, and heavy-duty trucks. Noise from construction equipment would generate both steady-state and episodic noise that could be heard within and adjacent to the Project site.

[11] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, Table 7-2, Page 179, September 2018.

Based on the FTA Transit Noise and Vibration Impact Assessment Manual (2018), a reasonable worst-case assumption is that the two loudest pieces of equipment would operate simultaneously within a focused area and occur continuously over at least one hour. The combined sound level of a jack hammer and dozer is 90 dBA when measured at 50 feet from the noise source. It should be noted that pile driving is not anticipated to be used for project construction.

The distance from the closest area where heavy equipment would operate to the sensitive receptor's area of frequent human use would be 3.24 miles. Based on distance attenuation alone, this maximum noise level would be reduced to 40 dBA at the closest receptor (assuming no attenuation from intervening topography or structure). Therefore, construction noise would not exceed the worst-case FTA construction noise criteria of 90 dBA for residential land uses.

Actual construction-related noise activities would be lower than the conservative levels described above and would cease upon completion of construction. Due to the variability of construction activities and equipment for the Project, overall construction noise levels would be intermittent and would fluctuate over time. These assumptions represent the worst-case noise scenario because construction activities would typically be spread out throughout the Project site, and thus some equipment would be farther away from the affected receptors. In addition, the noise modeling assumes that construction noise is constant, when, in fact, construction activities and associated noise levels would fluctuate and generally be brief and sporadic, depending on the type, intensity, and location of construction activities.

The Contractor would equip all construction equipment, fixed and mobile, with properly operating and maintained noise mufflers, consistent with manufacturer's standards. Additionally, adherence to the time of day restrictions in the Sacramento County Code would reduce construction noise impacts to a less than significant level.

Operations

Implementation of the proposed project would create new sources of noise in the project vicinity. The major noise sources associated with the project that would potentially impact existing and future nearby residences include the following:

- Mechanical equipment (i.e. trash compactors, air conditioners, etc.);
- Slow moving trucks on the Project site, approaching and leaving the loading areas;
- Activities at the loading areas (i.e. maneuvering and idling trucks, equipment noise);
- Parking areas (i.e. car door slamming, car radios, engine start-up, and car pass-by); and
- Off-Site Traffic Noise.

Mechanical Equipment

The nearest sensitive receptors to the Project site are the residences 3.24 miles away from the project area. Potential stationary noise sources related to long-term operation of the project site would include mechanical equipment. Mechanical equipment (e.g. heating ventilation and air conditioning [HVAC] equipment) typically generates noise levels of approximately 52 dBA at 50 feet.[12] Mechanical equipment noise would not be audible at the closest sensitive receptors located approximately 3.24 miles away.

[12] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

Operation of mechanical equipment would not increase ambient noise levels beyond the acceptable compatible land use noise levels. Therefore, the proposed Project would result in a less than significant impact related to stationary noise levels.

Truck and Loading Dock Noise

During loading and unloading activities, noise would be generated by the trucks' diesel engines, exhaust systems, and brakes during low gear shifting' braking activities; backing up toward the docks; dropping down the dock ramps; and maneuvering away from the docks. Typically, heavy truck operations generate a noise level of 68 dBA at a distance of 30 feet. The closest residences are located approximately 3.24 miles away from the airport and Project site. Truck noise would not be audible at the closet sensitive receptor. Loading dock doors would also be surrounded with protective aprons, gaskets, or similar improvements that, when a trailer is docked, would serve as a noise barrier between the interior warehouse activities and the exterior loading area. This would attenuate noise emanating from interior activities, and as such, interior loading and associated activities would be permissible during all hours of the day. Noise levels associated with trucks and loading or unloading activities would not exceed the County's standards and impacts would be less than significant.

Parking Noise

The proposed Project would accommodate the need for parking. Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 53 to 61 dBA at 50 feet and may be an annoyance to adjacent noise-sensitive receptors.[13] Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 50 feet for normal speech to 50 dBA at 50 feet for very loud speech.[14] It should be noted that parking lot noises are instantaneous noise levels compared to noise standards in the hourly L_{eq} metric, which are averaged over the entire duration of a time period.

Actual noise levels over time resulting from parking lot activities would be far lower than the reference levels identified above. Parking lot noise would occur within the surface parking lot on-site. It is also noted that parking lot noise occurs at the adjacent properties under existing conditions. Parking lot noise would be consistent with the existing noise in the vicinity and would be partially masked by background noise from traffic, either car or plane in the area. Noise associated with parking lot activities is not anticipated to exceed the County's noise standards during operation. Therefore, noise impacts from parking lots would be less than significant.

Off-Site Traffic Noise

Cargo Facility Traffic Noise. The proposed Project would result in additional traffic on adjacent roadways, thereby increasing vehicular noise near existing and proposed land uses. Roadway traffic noise levels were modeled based on the data from the Project VMT Assessment & Local Access, Safety, and Circulation Study. The Existing Without Cargo Facility" and "Existing Plus Cargo Facility" scenarios were also

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13 Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

14 Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden. Noise Navigator Sound Level Database with Over 1700 Measurement Values, July 6, 2010.

compared. As shown in **Table 9: Existing and Existing Plus Cargo Facility Traffic Noise Levels**, roadway noise levels would range from 49.4 dBA to 54.7 dBA under Existing Without Cargo Facility conditions and from 49.9 dBA to 60.7 dBA under Existing Plus Cargo Facility conditions. The highest noise levels would occur along Elverta Road, between Metro Air Parkway to Lone Tree Road. **Table 9** shows that Project generated traffic would result in a maximum increase of 8.9 dBA along Elverta Road between Earhart Drive and Power Line Road.

Table 9: Existing and Existing Plus Cargo Facility Traffic Noise Levels

Roadway Segment	Existing		Existing Plus Cargo Facility		Change	Significant Impacts
	ADT	dBA CNEL[1]	ADT	dBA CNEL[1]		
Elverta Road						
Garden Highway to Earhart Drive	563	49.6	600	49.9	0.3	No
Earhart Drive to Power Line Road	876	51.5	6,860	60.5	8.9	No
Power Line Road to Metro Air Parkway	1,232	53.0	6,620	60.3	7.3	No
Metro Air Parkway to Lone Tree Road	1,812	54.7	7,200	60.7	6.0	No
Lone Tree Road to SR-99	1,790	54.7	6,980	60.6	5.9	No
Power Line Road						
Elverta Road to Road A	539	49.4	1,140	52.7	3.3	No
Road A to Road D	539	49.4	1,140	52.7	3.3	No
Road D to Skyking Road	539	49.4	1,140	52.7	3.3	No
Skyking Road to Elkhorn Boulevard	1,023	52.2	1,620	54.2	2.0	No
Metro Air Parkway						
Elverta Road to Road A	602	50.1	610	50.2	0.1	No
Road A to Road D	602	50.0	610	50.0	0.1	No
Road D to Skyking Road	602	50.0	610	50.0	0.1	No
Skyking Road to Elkhorn Boulevard	1,710	54.5	1,710	54.5	0	No

ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level.
1. dBA CNEL at 100 feet from the roadway centerline. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography.

Source: Based on traffic data within the *VMT Assessment & Local Access, Safety, and Circulation Study*, prepared by Kimley-Horn, 2020. Refer to **Appendix A** for traffic noise modeling assumptions and results.

Based on the General Plan Noise Element, when pre-project traffic noise levels are less than 60 dB, a 5+ dB increase is required before the change is significant. When pre-project noise levels are between 60 dB and 65 dB, an increase of 3+ dB is required before the change is significant. When pre-project noise levels are above 65 dB, an increase of 1.5+ dB is required before the change is considered significant.

Table 9 indicates where the Proposed project would result in increases in traffic noise levels. The noise level increases may be considered significant based upon the General Plan noise level increase criteria along Elverta Road and Power Line Road. However, the areas along these roadways are designated agricultural and industrial, which have a land use compatibility standard of 70 dBA. **Table 9** shows that with Cargo Facility noise levels would be below the County's land use compatibility standard of 70 dBA for agricultural and industrial land uses. Additionally, it should be noted that Power Line Road is within the airport's 65 dBA CNEL contour. Therefore, traffic noise impacts from the Cargo Facility Project would be less than significant.

Airport Master Plan Update Impacts: The SMF Master Plan Update involves airport expansion to accommodate growth over the next 20 years. Currently, more than 2.1 million domestic passengers and more than 1.6 million international passengers travel to airports outside of the Sacramento region to take flights.[15] Primarily, these passengers use airports in the Bay Area with San Francisco International Airport (SFO), Oakland International Airport (OAK), and San Jose International Airport (SJC) capturing the majority of the passenger service. Accordingly, if the Airport does not expand and/or provide additional passenger service that meets the need of traveler, these longer vehicular trips to Bay Area airports would be assumed to continue or even expand as the demand for service naturally increases with population growth over time. The provision of additional gates to serve this unmet local demand is a primary catalyst of the proposed Project. Estimates for future air travel prepared by the Airport currently assume that half of the anticipated growth over the next 20 years will result from recapturing passengers from these Bay Area airports.

The reduction in VMT due to recapturing passengers would also reduce traffic noise in the region. As traffic would be reduced, fewer vehicles would be on the road and daily traffic volumes would decrease. As a result, the SMF Master Plan Update would not significantly affect traffic noise and impacts and would potentially reduce traffic noise. Therefore, impacts would be less than significant in this regard.

Construction and operational noise associated with the SMF Master Plan Update would be localized and would not extend beyond the existing airport property. No noise-sensitive land uses occur within the 65 dBA CNEL contour of the airport where construction would take place. Additionally, potential expansion that would occur pursuant to the Master Plan Update are not anticipated to significantly change the operational noise levels at the airport. Therefore, no noise-sensitive receptor impacts are anticipated.

Master Plan Update Traffic Noise. The Master Plan Update would also result in additional traffic on adjacent roadways, thereby increasing vehicular noise near existing and proposed land uses. Roadway traffic noise levels were modeled based on the data from the Project VMT Assessment & Local Access, Safety, and Circulation Study. As shown in **Table 10: Existing and Existing Plus Master Plan Update Traffic Noise Levels**, roadway noise levels would range from 50.0 dBA to 60.7 dBA under Existing With Master Plan Update conditions. The highest noise levels would occur along Elverta Road, between Metro Air Parkway to Lone Tree Road. **Table 10** shows that Project generated traffic would result in a maximum increase of 9.0 dBA along Elverta Road between Earhart Drive and Power Line Road.

Table 10 indicates where the Proposed project would result in increases in traffic noise levels. The noise level increases may be considered significant based upon the General Plan noise level increase criteria along Elverta Road and Power Line Road. However, as noted above, the areas along these roadways are designated agricultural and industrial, which have a land use compatibility standard of 70 dBA. **Table 10** shows that with the Master Plan Update noise levels would be below the County's land use compatibility standard of 70 dBA for agricultural and industrial land uses. Additionally, it should be noted that Power Line Road is within the airport's 65 dBA CNEL contour. Therefore, traffic noise impacts from the Master Plan Update would be less than significant.

[15] Campbell-Hill Aviation Group, LLC., *SMF Catchment Area Analysis,* April 2020 and Kimley-Horn, VMT Assessment & Local Access, Safety, and Circulation Study, July 2020.

Table 10: Existing and Existing Plus Master Plan Update Traffic Noise Levels						
Roadway Segment	**Existing**		**Existing Plus Cargo and Master Plan Update**		**Change**	**Significant Impacts**
	ADT	**dBA CNEL[1]**	**ADT**	**dBA CNEL[1]**		
Elverta Road						
Garden Highway to Earhart Drive	563	49.6	620	50.0	0.4	No
Earhart Drive to Power Line Road	876	51.5	6,940	60.5	9.0	No
Power Line Road to Metro Air Parkway	1,232	53.0	6,620	60.3	7.3	No
Metro Air Parkway to Lone Tree Road	1,812	54.7	7,200	60.7	6.0	No
Lone Tree Road to SR-99	1,790	54.7	6,980	60.6	5.9	No
Power Line Road						
Elverta Road to Road A	539	49.4	1,220	53.0	3.5	No
Road A to Road D	539	49.4	1,220	53.0	3.5	No
Road D to Skyking Road	539	49.4	1,220	53.0	3.5	No
Skyking Road to Elkhorn Boulevard	1,023	52.2	1,710	54.5	2.2	No
Metro Air Parkway						
Elverta Road to Road A	602	50.1	610	50.2	0.1	No
Road A to Road D	602	50.0	610	50.0	0.1	No
Road D to Skyking Road	602	50.0	610	50.0	0.1	No
Skyking Road to Elkhorn Boulevard	1,710	54.5	1,710	54.5	0	No

ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level.
1. dBA CNEL at 100 feet from the roadway centerline. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography.

Source: Based on traffic data within the *VMT Assessment & Local Access, Safety, and Circulation Study*, prepared by Kimley-Horn, 2020. Refer to **Appendix A** for traffic noise modeling assumptions and results.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold 6.2 Would the Project expose persons to or generate excessive ground borne vibration or ground borne noise levels?

Cargo Facility and Airport Master Plan Update Impacts: Once operational, the Project would not be a source of groundborne vibration. Increases in groundborne vibration levels attributable to the proposed Project would be primarily associated with short-term construction-related activities. Construction on the Project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 in/sec) appears to be conservative. The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, for a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.20 in/sec is considered safe and would not result in any construction vibration damage.

Table 11: Typical Construction Equipment Vibration Levels, lists vibration levels at 25 feet for typical construction equipment. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in **Table 11**, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range from 0.003 to 0.089 in/sec PPV at 25 feet from the source of activity.

Table 11: Typical Construction Equipment Vibration Levels

Equipment	Peak Particle Velocity at 25 Feet (in/sec)	Peak Particle Velocity at 50 Feet (in/sec)[1]
Large Bulldozer	0.089	0.031
Caisson Drilling	0.089	0.031
Loaded Trucks	0.076	0.027
Rock Breaker	0.059	0.021
Jackhammer	0.035	0.012
Small Bulldozer/Tractors	0.003	0.001

[1] Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPV_{ref} = the reference vibration level in in/sec from Table 7-4of the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018; D = the distance from the equipment to the receiver.

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.

The nearest sensitive receptors are the residential uses approximately 3.24 miles away and the nearest structures are more than 50 feet from the active construction zone. Using the calculation shown in **Table 11**, at 50 feet the vibration velocities from construction equipment would not exceed 0.031 in/sec PPV, which is below the FTA's 0.20 PPV threshold. It is also acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to the nearest residential structure. Therefore, vibration impacts associated with the proposed Project would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold 6.3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Cargo Facility Airport Master Plan Update Impacts: The Project involves a cargo facility that would serve SMF and an airport Master Plan Update that would accommodate growth over the next 20 years. Although portions of the cargo facility site are within the airport's 65 dBA CNEL contour, the actual sortation building and parking areas are located outside of the 65 dBA CNEL contour. Therefore, the areas that would be occupied by employees would be less than 65 dBA CNEL, which is considered Normally Compatible by the airport Land Use Plan. Additionally, potential expansion that would occur with the Master Plan Update would occur within the airport terminals or add on to existing airport structures. Therefore, the Project would not create a new impact in this regard.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6.2 Cumulative Noise Impacts

Cumulative Construction Noise

The Project's construction activities would not result in a substantial temporary increase in ambient noise levels. The Project would be subject to the limitations imposed by the County regarding construction noise. Sacramento County does not permit construction activities between the hours of 8:00 p.m. and 6am on weekdays and Friday commencing at 8:00 p.m. through and including 7:00 a.m. on Saturday; Saturdays commencing at 8:00 p.m. through and including 7:00 a.m. on the next following Sunday and on Sunday after the hour of 8:00 p.m. There would be periodic, temporary, noise impacts that would cease upon completion of construction activities. The Project would contribute to other proximate construction Project noise impacts if construction activities were conducted concurrently. However, based on the noise analysis above, the Project's construction-related noise impacts would be less than significant following compliance with the Sacramento County Code and General Plan. Therefore, would not create a significant cumulative impact from construction noise. In addition, Project construction would not make a cumulatively considerable contribution to significant cumulative impacts, assuming such a cumulative impact existed, and impacts in this regard are not cumulatively considerable.

Cumulative Construction Vibration

The Project's construction vibration levels would not exceed FTA thresholds therefore, the Project's incremental contribution is not cumulatively considerable. Given that vibration propagates in waves through the soil, multiple pieces of equipment operating simultaneously would each produce vibration waves in different phases that typically would not increase the magnitude of the vibration. Furthermore, vibration is a localized phenomenon, and tends to dissipate to insignificant levels within dozens of feet, as discussed in Threshold 6.2. Thus, there would be no possibility for vibration associated with the Project to combine with vibration from other projects because of their distances from the Project site. Therefore, the cumulative vibration impacts would be cumulatively less than significant.

Cumulative Operational Noise

Cumulative Off-Site Traffic Noise

Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the proposed Project and other foreseeable projects. Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to buildout of the proposed Project and other projects in the vicinity. Cumulative increases in traffic noise levels were estimated by comparing the Existing and Future Without Project scenarios to the Future Plus Project scenario. The traffic analysis considers cumulative traffic from future growth assumed in the transportation model, as well as cumulative projects.

A project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The following criteria is used to evaluate the combined and incremental effects of the cumulative noise increase.

- *Combined Effect.* The cumulative with Project noise level ("Cumulative With Project") would cause a significant cumulative impact if a 3.0 dB increase over "Existing" conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use. Although there may be a significant noise increase due to the proposed Project in combination with other related projects (combined effects), it must also be demonstrated that the Project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed Project.
- *Incremental Effects*. The "Cumulative With Project" causes a 1.0 dBA increase in noise over the "Cumulative Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded. Noise by definition is a localized phenomenon and reduces as distance from the source increases. Consequently, only the proposed Project and growth due to occur in the general area would contribute to cumulative noise impacts. **Table 12: Cumulative Plus Project Conditions Predicted Traffic Noise Levels**, identifies the traffic noise effects along roadway segments in the Project vicinity for "Existing," "Cumulative Without Project," and "Cumulative With Project," conditions, including incremental and net cumulative impacts.

Table 12: Cumulative Plus Project Conditions Predicted Traffic Noise Levels

Roadway Segment	Existing	Cumulative Without Project	Cumulative With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
				Difference In dBA Between Existing and Cumulative With Project	Difference In dBA Between Cumulative Without Project and Cumulative With Project	
Elverta Road						
Garden Highway to Earhart Drive	49.6	49.7	49.7	0.1	0	No
Earhart Drive to Power Line Road	51.5	51.6	59.3	7.8	7.7	No
Power Line Rd. to Metro Air Pkwy.	53.0	53.1	58.9	5.9	5.8	No
Metro Air Pkwy. to Lone Tree Rd.	54.7	56.1	60.4	5.7	4.3	No
Lone Tree Road to SR-99	54.7	56.0	60.3	5.6	4.3	No
Power Line Road						
Elverta Road to Road A	49.4	49.5	53.5	4.1	4.0	No
Road A to Road D	49.4	49.5	53.5	4.1	4.0	No
Road D to Skyking Road	49.4	49.5	53.5	4.1	4.0	No
Skyking Rd. to Elkhorn Blvd.	52.2	52.2	54.8	2.6	2.6	No
Metro Air Parkway						
Elverta Road to Road A	50.1	53.6	55.8	5.7	2.2	No
Road A to Road D	50.0	53.4	55.6	5.6	2.2	No
Road D to Skyking Road	50.0	53.4	55.6	5.6	2.2	No
Skyking Rd. to Elkhorn Blvd.	54.5	56.0	57.4	2.9	1.4	No

Table 12: Cumulative Plus Project Conditions Predicted Traffic Noise Levels

Roadway Segment	Existing	Cumulative Without Project	Cumulative With Project	Combined Effects: Difference In dBA Between Existing and Cumulative With Project	Incremental Effects: Difference In dBA Between Cumulative Without Project and Cumulative With Project	Cumulatively Significant Impact?
Elkhorn Blvd. to Meister Way	N/A	61.9	61.9	N/A	0	No
Meister Way to I-5	N/A	70.0	70.1	N/A	0.1	No

ADT = average daily trips; dBA = A-weighted decibels; CNEL = Community Noise Equivalent Level
1. Traffic noise levels are at 100 feet from the roadway centerline. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography.

Source: Based on traffic data within the *VMT Assessment & Local Access, Safety, and Circulation Study*, prepared by Kimley-Horn, 2020. Refer to **Appendix A** for traffic noise modeling assumptions and results.

Table 12 shows that the "Future With Project" increase above existing conditions (*Combined Effects*) is exceeded along most of the roadway segments. Additionally, the same roadway segments also exceed the *Incremental Effects* criteria. However, as noted above, the areas along these roadways are designated agricultural and industrial, which have a land use compatibility standard of 70 dBA. **Table 12** shows that with the Master Plan Update noise levels would be below the County's land use compatibility standard of 70 dBA for agricultural and industrial land uses. Although Metro Air Parkway (between Meister Way and I-5) exceeds 70 dBA, the Project's contribution would be 0.1 dBA, which is below the *Incremental Effects* criteria. Additionally, it should be noted that Power Line Road is within the airport's 65 dBA CNEL contour. The proposed Project would not result in long-term mobile noise impacts based on project-generated traffic as well as cumulative and incremental noise levels. Therefore, the proposed Project, in combination with cumulative background traffic noise levels, would result in a less than significant cumulative impact. The proposed Project's contribution to would not be cumulatively considerable.

Cumulative Stationary Noise

Stationary noise sources of the proposed Project would result in an incremental increase in non-transportation noise sources in the Project vicinity. However, as discussed above, operational noise caused by the proposed Project would be less than significant. Additionally, due to site distance to sensitive receptors and existing airport noise in the area, cumulative stationary noise impacts would not occur. Similar to the proposed Project, other planned and approved projects would be required to mitigate for stationary noise impacts at nearby sensitive receptors, if necessary. As stationary noise sources are generally localized, there is a limited potential for other projects to contribute to cumulative noise impacts.

No known past, present, or reasonably foreseeable projects would combine with the operational noise levels generated by the Project to increase noise levels above acceptable standards because each project must comply with applicable City regulations that limit operational noise. Therefore, the Project, together with other projects, would not create a significant cumulative impact, and even if there was such a significant cumulative impact, the Project would not make a cumulatively considerable contribution to significant cumulative operational noises.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

7 REFERENCES

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Appendix A

Noise Modeling Results

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: SMF Cargo and MPU
Project Number: 097113105
Scenario: Existing
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Elverta Road	Garden Highway to Earhart Drive	2	0	563	55	1	2.0%	1.0%	49.6	-	-	-	54
2	Elverta Road	Earhart Drive to Power Line Road	2	0	876	55	1	2.0%	1.0%	51.5	-	-	38	67
3	Elverta Road	Power Line Road to Metro Air Parkway	2	0	1,232	55	1	2.0%	1.0%	53.0	-	-	45	80
4	Elverta Road	Metro Air Parkway to Lone Tree Road	2	0	1,812	55	1	2.0%	1.0%	54.7	-	-	54	97
5	Elverta Road	Lone Tree Road to SR-99	2	0	1,790	55	1	2.0%	1.0%	54.7	-	-	54	96
6	Power Line Road	Elverta Road to Road A	2	0	539	55	1	2.0%	1.0%	49.4	-	-	-	53
7	Power Line Road	Road A to Road D	2	0	539	55	1	2.0%	1.0%	49.4	-	-	-	53
8	Power Line Road	Road D to Skyking Road	2	0	539	55	1	2.0%	1.0%	49.4	-	-	-	53
9	Power Line Road	Skyking Road to Elkhorn Boulevard	2	0	1,023	55	1	2.0%	1.0%	52.2	-	-	41	73
10	Metro Air Parkway	Elverta Road to Road A	2	35	602	55	1	2.0%	1.0%	50.1	-	-	-	57
11	Metro Air Parkway	Road A to Road D	2	12	602	55	1	2.0%	1.0%	50.0	-	-	-	56
12	Metro Air Parkway	Road D to Skyking Road	2	12	602	55	1	2.0%	1.0%	50.0	-	-	-	56
13	Metro Air Parkway	Skyking Road to Elkhorn Boulevard	2	12	1,710	55	1	2.0%	1.0%	54.5	-	-	53	94

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: SMF Cargo and MPU
Project Number: 097113105
Scenario: Existing Plus Cargo Facility
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Elverta Road	Garden Highway to Earhart Drive	2	0	600	55	1	2.0%	1.0%	49.9	-	-	-	56
2	Elverta Road	Earhart Drive to Power Line Road	2	0	6,860	55	1	2.0%	1.0%	60.5	33	59	106	188
3	Elverta Road	Power Line Road to Metro Air Parkway	2	0	6,620	55	1	2.0%	1.0%	60.3	33	58	104	185
4	Elverta Road	Metro Air Parkway to Lone Tree Road	2	0	7,200	55	1	2.0%	1.0%	60.7	34	61	108	193
5	Elverta Road	Lone Tree Road to SR-99	2	0	6,980	55	1	2.0%	1.0%	60.6	34	60	107	190
6	Power Line Road	Elverta Road to Road A	2	0	1,140	55	1	2.0%	1.0%	52.7	-	-	43	77
7	Power Line Road	Road A to Road D	2	0	1,140	55	1	2.0%	1.0%	52.7	-	-	43	77
8	Power Line Road	Road D to Skyking Road	2	0	1,140	55	1	2.0%	1.0%	52.7	-	-	43	77
9	Power Line Road	Skyking Road to Elkhorn Boulevard	2	0	1,620	55	1	2.0%	1.0%	54.2	-	-	51	91
10	Metro Air Parkway	Elverta Road to Road A	2	35	610	55	1	2.0%	1.0%	50.2	-	-	-	58
11	Metro Air Parkway	Road A to Road D	2	12	610	55	1	2.0%	1.0%	50.0	-	-	-	56
12	Metro Air Parkway	Road D to Skyking Road	2	12	610	55	1	2.0%	1.0%	50.0	-	-	-	56
13	Metro Air Parkway	Skyking Road to Elkhorn Boulevard	2	12	1,710	55	1	2.0%	1.0%	54.5	-	-	53	94

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: SMF Cargo and MPU
Project Number: 097113105
Scenario: Existing Plus Cargo Facility and MPU
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Elverta Road	Garden Highway to Earhart Drive	2	0	620	55	1	2.0%	1.0%	50.0	-	-	-	57
2	Elverta Road	Earhart Drive to Power Line Road	2	0	6,940	55	1	2.0%	1.0%	60.5	34	60	106	189
3	Elverta Road	Power Line Road to Metro Air Parkway	2	0	6,620	55	1	2.0%	1.0%	60.3	33	58	104	185
4	Elverta Road	Metro Air Parkway to Lone Tree Road	2	0	7,200	55	1	2.0%	1.0%	60.7	34	61	108	193
5	Elverta Road	Lone Tree Road to SR-99	2	0	6,980	55	1	2.0%	1.0%	60.6	34	60	107	190
6	Power Line Road	Elverta Road to Road A	2	0	1,220	55	1	2.0%	1.0%	53.0	-	-	45	79
7	Power Line Road	Road A to Road D	2	0	1,220	55	1	2.0%	1.0%	53.0	-	-	45	79
8	Power Line Road	Road D to Skyking Road	2	0	1,220	55	1	2.0%	1.0%	53.0	-	-	45	79
9	Power Line Road	Skyking Road to Elkhorn Boulevard	2	0	1,710	55	1	2.0%	1.0%	54.5	-	-	53	94
10	Metro Air Parkway	Elverta Road to Road A	2	35	610	55	1	2.0%	1.0%	50.2	-	-	-	58
11	Metro Air Parkway	Road A to Road D	2	12	610	55	1	2.0%	1.0%	50.0	-	-	-	56
12	Metro Air Parkway	Road D to Skyking Road	2	12	610	55	1	2.0%	1.0%	50.0	-	-	-	56
13	Metro Air Parkway	Skyking Road to Elkhorn Boulevard	2	12	1,710	55	1	2.0%	1.0%	54.5	-	-	53	94

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: SMF Cargo and MPU
Project Number: 097113105
Scenario: Horizon Year
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Elverta Road	Garden Highway to Earhart Drive	2	0	570	55	1	2.0%	1.0%	49.7	-	-	-	54
2	Elverta Road	Earhart Drive to Power Line Road	2	0	880	55	1	2.0%	1.0%	51.6	-	-	38	67
3	Elverta Road	Power Line Road to Metro Air Parkway	2	0	1,240	55	1	2.0%	1.0%	53.1	-	-	45	80
4	Elverta Road	Metro Air Parkway to Lone Tree Road	2	0	2,480	55	1	2.0%	1.0%	56.1	-	36	64	113
5	Elverta Road	Lone Tree Road to SR-99	2	0	2,470	55	1	2.0%	1.0%	56.0	-	36	63	113
6	Power Line Road	Elverta Road to Road A	2	0	550	55	1	2.0%	1.0%	49.5	-	-	-	53
7	Power Line Road	Road A to Road D	2	0	550	55	1	2.0%	1.0%	49.5	-	-	-	53
8	Power Line Road	Road D to Skyking Road	2	0	550	55	1	2.0%	1.0%	49.5	-	-	-	53
9	Power Line Road	Skyking Road to Elkhorn Boulevard	2	0	1,030	55	1	2.0%	1.0%	52.2	-	-	41	73
10	Metro Air Parkway	Elverta Road to Road A	2	35	1,330	55	1	2.0%	1.0%	53.6	-	-	-	85
11	Metro Air Parkway	Road A to Road D	2	12	1,330	55	1	2.0%	1.0%	53.4	-	-	47	83
12	Metro Air Parkway	Road D to Skyking Road	2	12	1,330	55	1	2.0%	1.0%	53.4	-	-	47	83
13	Metro Air Parkway	Skyking Road to Elkhorn Boulevard	2	12	2,430	55	1	2.0%	1.0%	56.0	-	-	63	113
14	Metro Air Parkway	Elkhorn Boulevard to Meister Way	2	12	3,450	55	1	4.6%	12.3%	61.9	39	70	125	221
15	Metro Air Parkway	Meister Way to I-5	2	12	22,270	55	1	4.6%	12.3%	70.0	100	178	316	563

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: SMF Cargo and MPU
Project Number: 097113105
Scenario: Future Plus Cargo Facility
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Elverta Road	Garden Highway to Earhart Drive	2	0	570	55	1	2.0%	1.0%	49.7	-	-	-	54
2	Elverta Road	Earhart Drive to Power Line Road	2	0	5,240	55	1	2.0%	1.0%	59.3	-	52	92	164
3	Elverta Road	Power Line Road to Metro Air Parkway	2	0	4,810	55	1	2.0%	1.0%	58.9	-	50	89	157
4	Elverta Road	Metro Air Parkway to Lone Tree Road	2	0	5,820	55	1	2.0%	1.0%	59.8	-	55	97	173
5	Elverta Road	Lone Tree Road to SR-99	2	0	5,710	55	1	2.0%	1.0%	59.7	-	54	96	172
6	Power Line Road	Elverta Road to Road A	2	0	1,320	55	1	2.0%	1.0%	53.3	-	-	46	82
7	Power Line Road	Road A to Road D	2	0	1,320	55	1	2.0%	1.0%	53.3	-	-	46	82
8	Power Line Road	Road D to Skyking Road	2	0	1,320	55	1	2.0%	1.0%	53.3	-	-	46	82
9	Power Line Road	Skyking Road to Elkhorn Boulevard	2	0	1,810	55	1	2.0%	1.0%	54.7	-	-	54	97
10	Metro Air Parkway	Elverta Road to Road A	2	35	1,330	55	1	2.0%	1.0%	53.6	-	-	-	85
11	Metro Air Parkway	Road A to Road D	2	12	1,330	55	1	2.0%	1.0%	53.4	-	-	47	83
12	Metro Air Parkway	Road D to Skyking Road	2	12	1,330	55	1	2.0%	1.0%	53.4	-	-	47	83
13	Metro Air Parkway	Skyking Road to Elkhorn Boulevard	2	12	2,430	55	1	2.0%	1.0%	56.0	-	-	63	113
14	Metro Air Parkway	Elkhorn Boulevard to Meister Way	2	12	3,450	55	1	4.6%	12.3%	61.9	39	70	125	221
15	Metro Air Parkway	Meister Way to I-5	2	12	22,560	55	1	4.6%	12.3%	70.1	101	179	319	566

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: SMF Cargo and MPU
Project Number: 097113105
Scenario: Horizon Year Plus Cargo Facility and MPU
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	CNEL at 100 Feet	Distance from Centerline of Roadway / Distance to Contour: 70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Elverta Road	Garden Highway to Earhart Drive	2	0	570	55	1	2.0%	1.0%	49.7	-	-	-	54
2	Elverta Road	Earhart Drive to Power Line Road	2	0	5,280	55	1	2.0%	1.0%	59.3	-	52	93	165
3	Elverta Road	Power Line Road to Metro Air Parkway	2	0	4,810	55	1	2.0%	1.0%	58.9	-	50	89	157
4	Elverta Road	Metro Air Parkway to Lone Tree Road	2	0	6,700	55	1	2.0%	1.0%	60.4	33	59	105	186
5	Elverta Road	Lone Tree Road to SR-99	2	0	6,590	55	1	2.0%	1.0%	60.3	33	58	104	184
6	Power Line Road	Elverta Road to Road A	2	0	1,370	55	1	2.0%	1.0%	53.5	-	-	47	84
7	Power Line Road	Road A to Road D	2	0	1,370	55	1	2.0%	1.0%	53.5	-	-	47	84
8	Power Line Road	Road D to Skyking Road	2	0	1,370	55	1	2.0%	1.0%	53.5	-	-	47	84
9	Power Line Road	Skyking Road to Elkhorn Boulevard	2	0	1,850	55	1	2.0%	1.0%	54.8	-	-	55	98
10	Metro Air Parkway	Elverta Road to Road A	2	35	2,200	55	1	2.0%	1.0%	55.8	-	-	61	109
11	Metro Air Parkway	Road A to Road D	2	12	2,200	55	1	2.0%	1.0%	55.6	-	-	60	107
12	Metro Air Parkway	Road D to Skyking Road	2	12	2,200	55	1	2.0%	1.0%	55.6	-	-	60	107
13	Metro Air Parkway	Skyking Road to Elkhorn Boulevard	2	12	3,310	55	1	2.0%	1.0%	57.4	-	42	74	131
14	Metro Air Parkway	Elkhorn Boulevard to Meister Way	2	12	3,450	55	1	4.6%	12.3%	61.9	39	70	125	221
15	Metro Air Parkway	Meister Way to I-5	2	12	22,560	55	1	4.6%	12.3%	70.1	101	179	319	566

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

PD-1

SMF Master Plan Update

1

INVENTORY SUMMARY

MASTER PLAN

July, 2020

SACRAMENTO COUNTY

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INTRODUCTION

The Sacramento County Department of Airports (SCDA or the Department) owns and/or operates Sacramento International Airport (SMF or the Airport), Sacramento Mather Airport (MHR), Sacramento Executive Airport (SAC) and Franklin Field (F72). The purpose of the Master Plan Update is to provide guidance for the continued improvement of SMF over a 20-year planning horizon (2018 through 2038) and beyond. This chapter summarizes relevant background information, existing airport facilities and conditions, and provides the basis for assessing future facility requirements at the Airport.

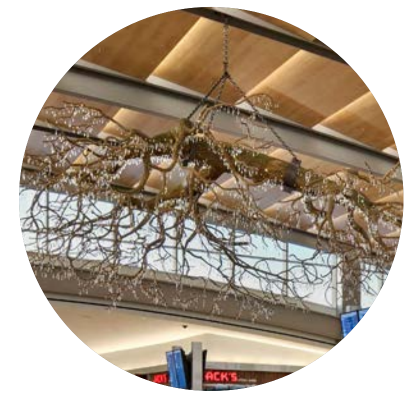
INVENTORY COMPONENTS

Airport Overview

SMF is located in Sacramento County, approximately 10 miles northwest of downtown Sacramento . In 2018, the U.S. Department of Commerce, Bureau of the Census estimated the population of the Sacramento-Arden-Arcade-Roseville Metropolitan Statistical Area (the Sacramento MSA) to be 2.3 million. The population of the Sacramento MSA is highly concentrated in Sacramento County, where both the Airport and the City of Sacramento are located.

Airfield and Airspace

The airfield consists of runways, taxiways, and apron areas, as well as lighting and navigational aids. Navigational aids enable the Airport to accommodate air traffic, especially during periods of low cloud cover and reduced visibility. The airspace surrounding SMF and air traffic control procedures are under the authority and discretion of the Federal Aviation Administration (FAA).



Passenger Terminal Complex

The passenger terminal complex is defined as the two terminal buildings and associated concourses, which provide slightly more than 1,000,000 square feet of space. Terminal A consists of a single building, a terminal with a two-pier, airside concourse. Terminal B consists of two buildings—a landside terminal and a separate airside concourse connected by an automated people mover (APM) train.

Ground Access and Parking

Primary access to the Airport is provided from the south via I-5 and Airport Boulevard. The terminal areas are served by a one-way roadway system with each terminal served by an independent loop roadway. The Airport provides approximately 7,400 “close-in” public parking spaces out of approximately 18,500 total public parking spaces, or approximately 40%, with the balance considered remote. The rental car facilities accommodate ten rental car brands using seven facilities. Public transit service to the Airport is provided by Yolo Transit, which operates two routes serving the Airport.

Air Cargo

Air cargo facilities at SMF include the air cargo building, the United Air Freight building, the airline catering building, and the United States Postal Service (USPS) facility. Six cargo airlines serve the Airport: ABX Air, Amerijet, Air Transport International (ATI), Atlas Air, FedEx and Westair Industries. Worldwide Flight Services, a ground handling company, loads and unloads cargo for ABX Air, ATI, and Atlas Air. Cargo is carried in the belly compartments of passenger aircraft. SMF is eligible for Cargo Entitlements as more than 100 million pounds of cargo from cargo-only aircraft lands at the Airport.

General Aviation and FAA Facilities

The Airport is home to a Fixed-Base Operator (FBO), a Specialized Aviation Service Operator (SASO), and a FAA Flight Inspection Field Office (FIFO). The Airport's FBO, SACjet provides a complete range of general aviation services, including fueling, customs, ground handling, hangar storage, concierge, and catering services. The Airport's SASO, the Textron Aviation Sacramento Service Center, is capable of serving all Citation, Caravan, Beechcraft, and Hawker products. The FAA FIFO performs flight inspection activities to certify navigational aids and instrument flight procedures for the Sacramento region.

Aviation Support

Aviation support facilities at the Airport include Aircraft Rescue and Firefighting (ARFF), in-flight catering, Airport administration, aircraft fuel storage, and airline support facilities, as well as Airport equipment storage and maintenance areas.

Utilities

Utilities at the Airport consist of water, storm drainage, sanitary sewer, jet fuel, electrical and communications, and natural gas systems. Water, storm drainage, sanitary sewer, and jet fuel systems are referred to as wet utilities. Electrical and communications and natural gas systems are referred to as dry utilities.

1-1 AIRPORT OVERVIEW

The Airport is located in Sacramento County, approximately 10 miles northwest of downtown Sacramento (see **Figure 1-1**). In 2018, the U.S. Department of Commerce, Bureau of the Census estimated the population of the Sacramento-Arden-Arcade-Roseville Metropolitan Statistical Area (the Sacramento MSA) to be 2.3 million. The population of the Sacramento MSA is highly concentrated in Sacramento County, where both the Airport and the City of Sacramento are located.

The Airport is classified in the National Plan of Integrated Airport Systems (NPIAS) as a Commercial Service Primary Airport, serving mostly origin-destination (O&D) passengers (i.e., passengers beginning or ending their air journeys in Sacramento) and some connecting passengers transferring from one flight to another. The Airport is further classified by the Federal Aviation Administration (FAA) as a medium-hub airport (medium-hub airports each accommodate at least 0.25% but less than 1.00% of the nation's annual enplaned passengers).

According to 2017 data published by Airports Council International-North America (ACI-NA), the Airport is the nation's 45th busiest airport in terms of passenger traffic and the 79th busiest in terms of total aircraft operations.

The following airlines currently serve the Airport: AeroMexico, Alaska Airlines, American Airlines, Air Canada, Boutique Air, Contour Airlines, Delta Air Lines, Frontier Airlines, Hawaiian Airlines, Horizon Air, JetBlue Airways, Spirit Airlines, Southwest Airlines, Sun Country Airlines, United Airlines, and Volaris.

Airport Site

The Airport occupies an approximately 5,900-acre site that is generally bounded by Power Line Road to the east, Garden Highway to the west, the Sacramento River to the west and south, and West Riego Road to the north. Primary access to the Airport is provided via Interstate 5 (I-5). **Figures 1-2, 1-3, and 1-4 identify primary on-Airport land uses, key areas on the Airport site, and specific Airport facilities, respectively**.

Airport Access

Access to the Airport terminal facilities and other Airport facilities south of Taxiway W is provided via I-5 and Airport Boulevard, with an alternate route provided by Bayou Way. Access to Airport facilities north of Taxiway W is provided via West Elverta Road and Earhart Drive.

On-Airport Land Use

The use and acreage of Airport land is presented in Table 1-1. The functional designations are defined as follows:

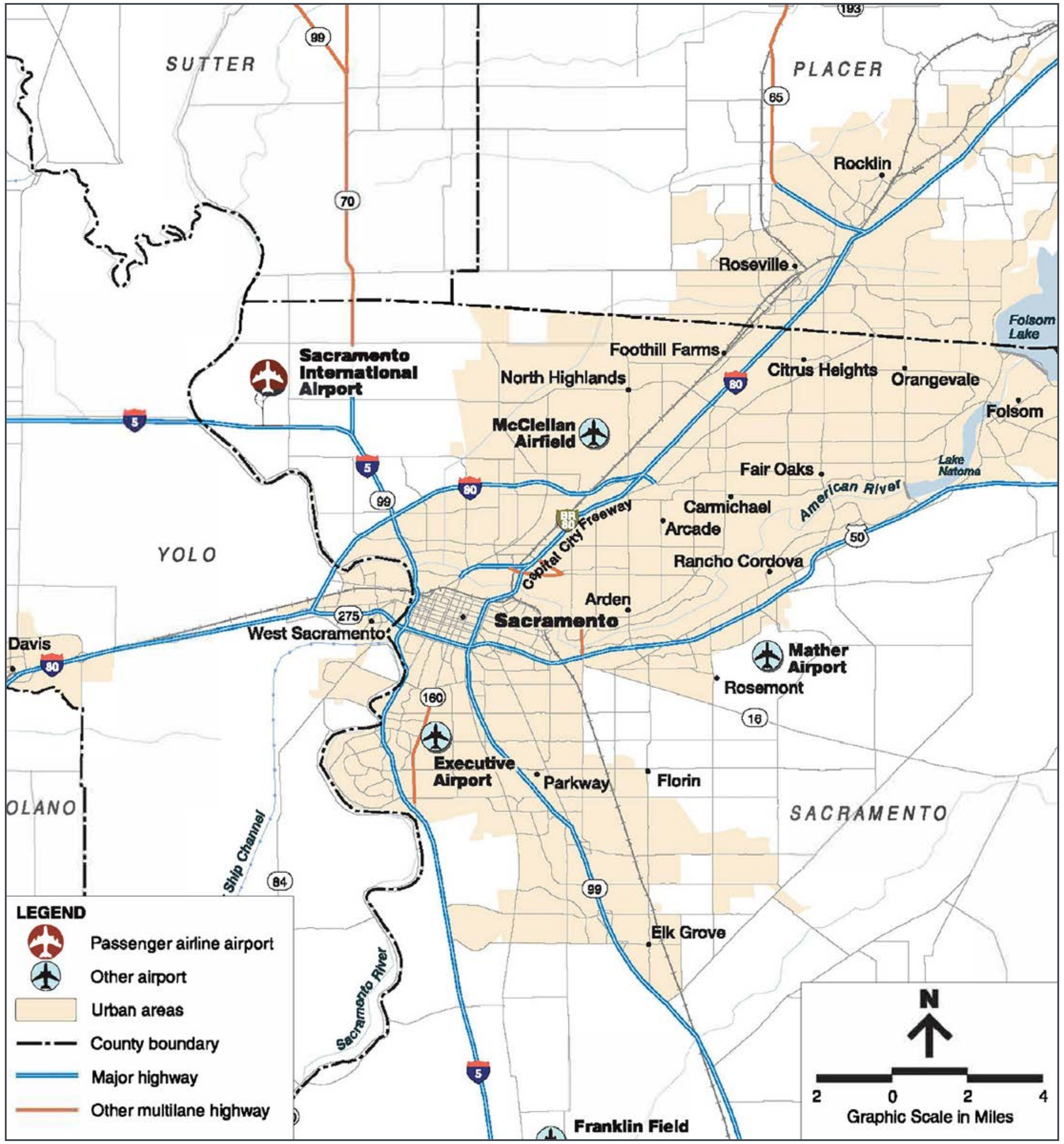
- Airfield – runways, taxiways, aprons, navigational aids, runway protection zones, and safety areas directly related to the movement of aircraft
- Passenger Terminal – passenger terminal/concourse buildings, ground support equipment (GSE) areas, and other landside facilities
- Parking – public parking lots, public parking garage, and employee/tenant parking lots
- Rent-A-Car - areas used by rental car facilities
- Air Cargo – areas dedicated to the movement, distribution, and delivery of cargo
- General Aviation (and FAA) – FBO, SASO, other GA aircraft service areas, hangars, aircraft parking aprons, and offices. FAA facilities refer to the FAA FIFO on the Airport and in vicinity of the GA facilities
- Aviation Support – facilities associated with the passenger terminal facilities, including, airline catering, maintenance facilities, aircraft fuel storage, and employee parking areas
- Commercial – non-aviation-related properties leased to private entities for office, warehouse, and other business functions, and rental car facilities
- Strategic Reserve – areas owned by the Airport, including Airport buffer lands (defined as Airport Management Area on the Airport Layout Plan) or areas reserved for future Airport development
- Airport Habitat Mitigation Area – areas reserved for habitat mitigation
- Stormwater detention – areas used to temporarily manage stormwater runoff to prevent flooding

Table 1-1 On-Airport Land Uses

Land Use Area	Acres	Percent of Total
Airfield	1,417.4	23.6%
Passenger Terminal	12.4	0.2%
Parking	138.1	2.3%
Rent-A-Car	42.9	0.7%
Air Cargo	36.8	0.6%
General Aviation (and FAA)	36.9	0.6%
Aviation Support	67.6	1.1%
Commercial	3.7	0.1%
Strategic Reserve	3,248.2	54.1%
Habitat Mitigation Area	786.4	13.1%
Stormwater Detention	209.6	3.5%
Total	**6,000**	**100.0%**

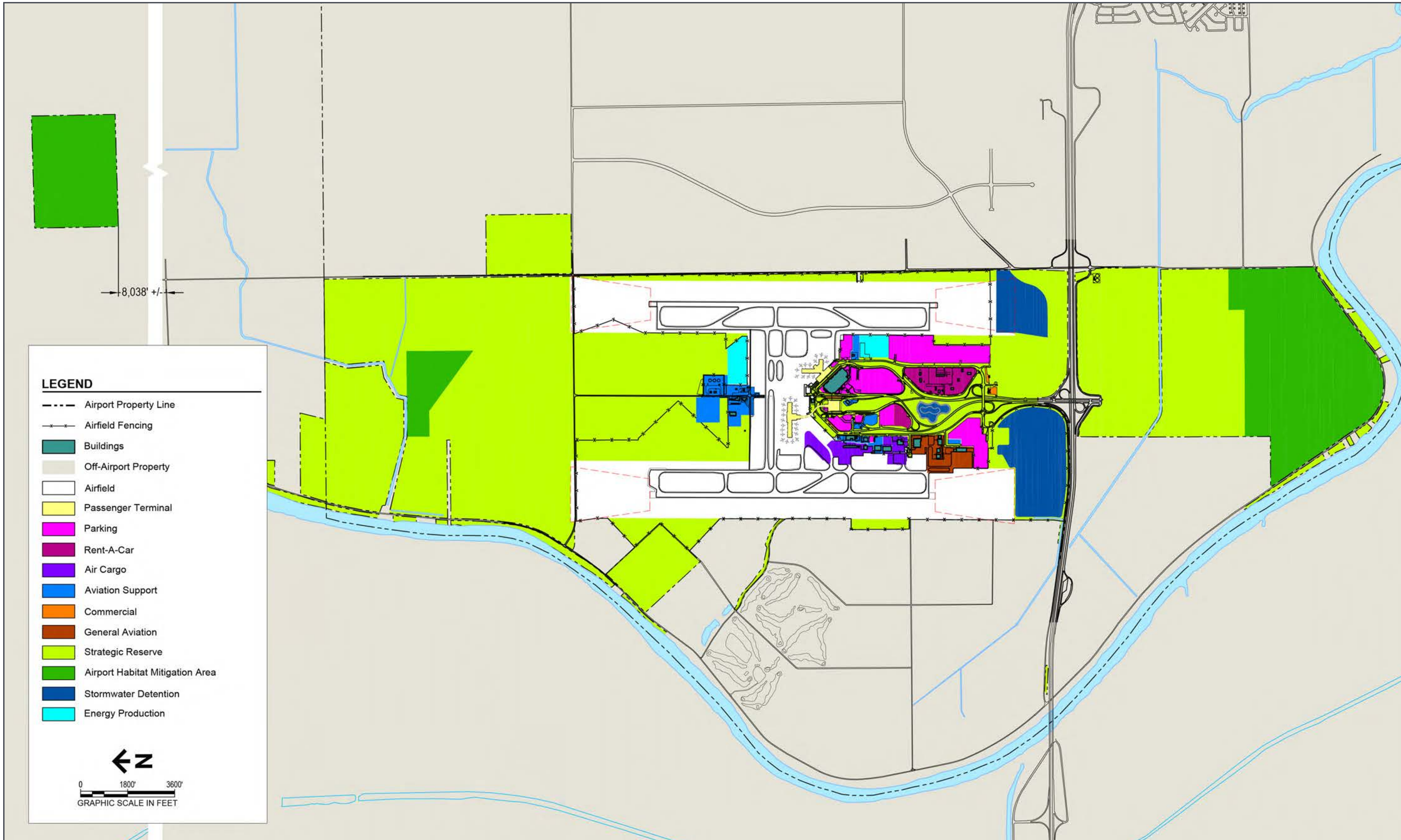
Source: Sacramento County Department of Airports, 2019.

Figure 1-1 Vicinity Map



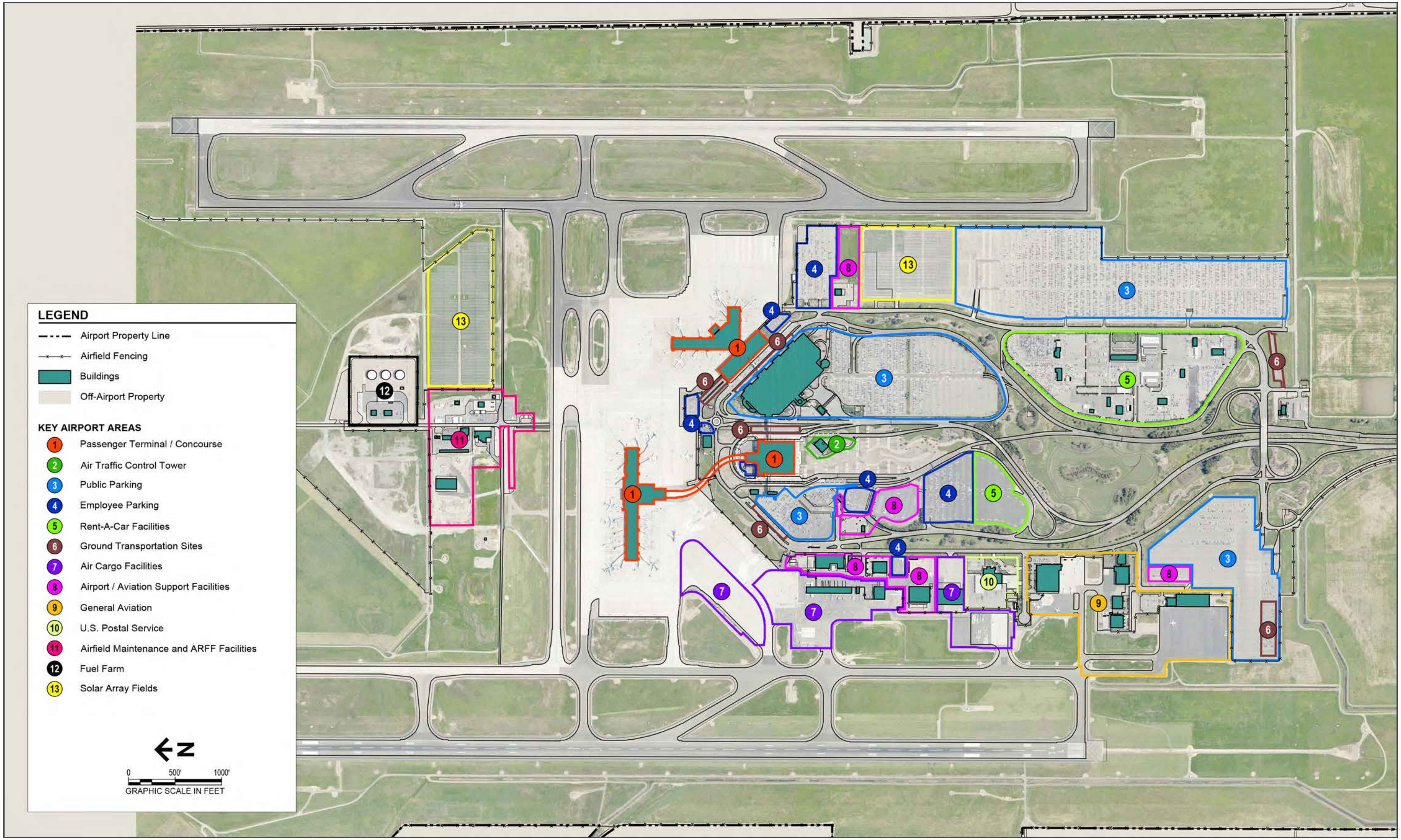
Source: Sacramento County Department of Airports, 2019.

Figure 1-2 On Airport Land Use



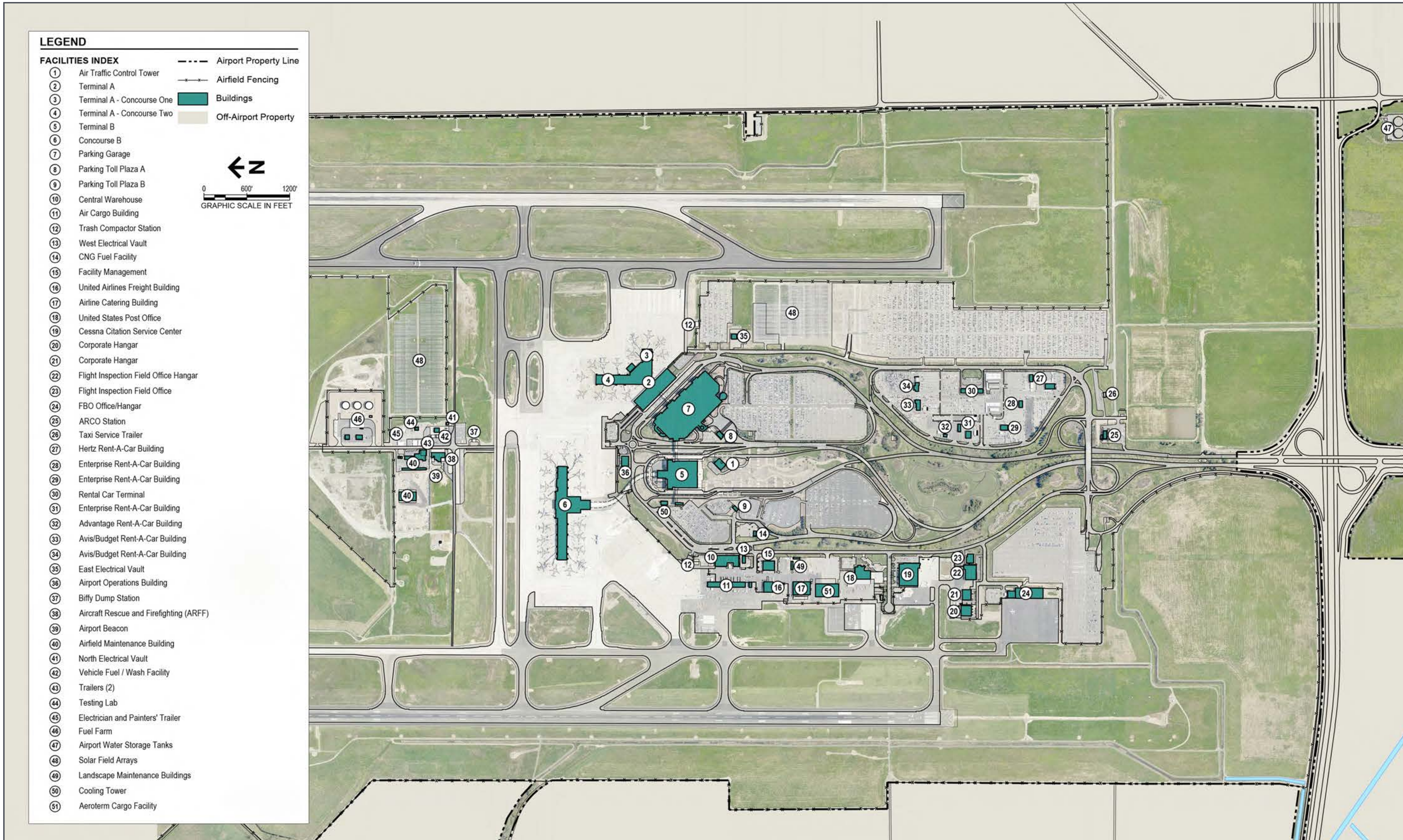
Source: Sacramento County Department of Airports, 2019.

Figure 1-3 Key Areas on the Airport Site



Source: Sacramento County Department of Airports, 2019.

Figure 1-4 Airport Facilities



Source: Sacramento County Department of Airports, 2019.

Environmental Considerations

An Environmental Impact Report (EIR) was completed in 2007 for the 2004 SMF Master Plan (adopted in 2007). An addendum to the EIR was completed in 2018 that reviewed proposed projects and projected growth at SMF over the near- and medium-term timeline of the Master Plan. Potential significant effects documented in the 2007 EIR included: impacts to land use plans and policies, traffic and circulation, air quality, hydrology, biological, and cultural resources. Any further minor technical changes to the 2007 EIR, based on minor project modifications resulting from this master plan update, will be noted in a subsequent addendum.

When considering additional development at the Airport, several potential environmental constraints must be considered, as described below:

- Wildlife habitats
- Airport Habitat Mitigation Areas (AHMAs)
- Waters of the U.S.
- Floodplains
- Stormwater detention basins

Geopolitical Setting

The Airport represents a significant investment of both public and private funds and is a major regional economic asset. The following sections describe aspects of City and County urban planning initiatives that will affect development and operation of the Airport.

Regional Blueprint

The Sacramento Area Council of Governments (SACOG) Board of Directors adopted the Preferred Blueprint Scenario (Blueprint) in December 2004. The Blueprint is part of SACOG's Metropolitan Transportation Plan/Sustainable Communities Strategy for 2035; the long-range transportation plan for the six-county region (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties).

The Airport serves its role in the Blueprint strategy as a component of transportation choices for the region. Ultimately, in the Blueprint plan, the Airport is connected via the Regional Transit Green Line to the major residential population and employment centers located east of the Airport. Present master planning of facilities, as shown on the 2019 Airport Layout Plan (ALP), depict accommodation of the Green Line light rail and station at the Airport, with direct connection to passenger Terminal B.

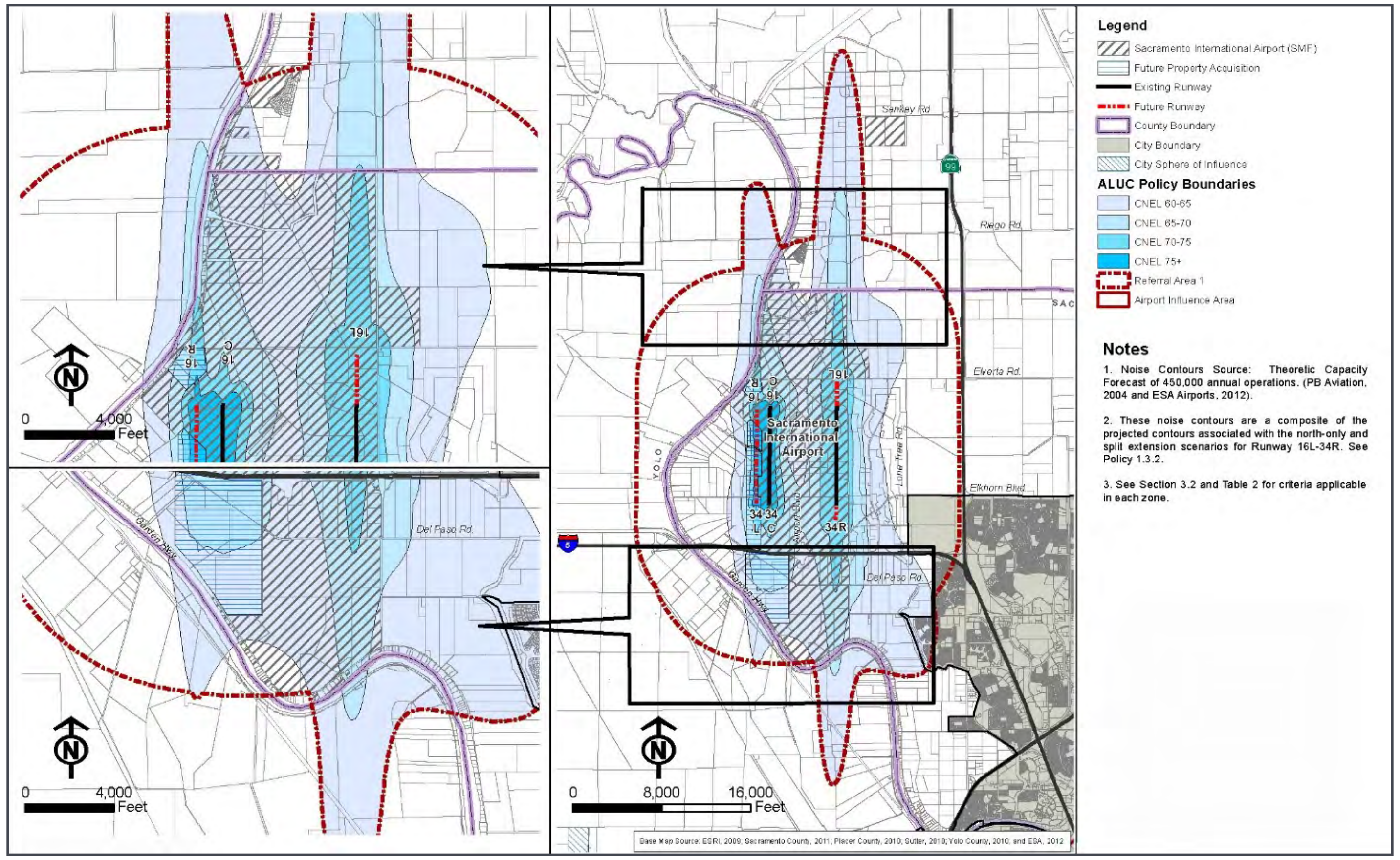
Airport Land Use Commission

On December 12, 2013, the SACOG Board, serving as the Airport Land Use Commission, adopted the Airport Land Use Compatibility Plan (ALUCP) for Sacramento International Airport and the corresponding Initial Study/Negative Declaration. The SACOG Board of Directors serves as the Airport Land Use Commission (ALUC) for Sacramento, Sutter, Yolo and Yuba counties. California's State Aeronautics Act (Public Utilities Code, Chapter 4, Article 3.5), identifies the role and responsibilities of the ALUC in land use planning. The Act's ALUC requirements are intended to ensure that proposed land uses near public-use airports are compatible with airport uses in terms of safety, noise, and airspace.

Noise contours prepared for the ALUCP considered airfield configuration, fleet mix, and activity levels (**Figure 1-5**). The noise contours reflected a future airfield configuration that extended Runway 16L/34R in both a north-only and split extension scenario, plus a future parallel runway on the west side of the airfield. The noise contours also considered a theoretic capacity of 450,000 annual operations based on a full build-out of all airfield facilities.

These noise contours represent an airport buildout and airport activity levels that exceed those anticipated during this master plan update. Therefore, the current noise contours sufficiently account for the implementation of the master plan projects through the 20-year planning horizon.

Figure 1-5 ALUCP Noise Contours



Source: SMF ALUCP, 2013

Metro Air Park

Immediately to the east of the Airport is the Metro Air Park, an approximately 1900-acre business park along Interstate 5. Metro Air Park is roughly nine miles from downtown Sacramento and has been entitled and zoned as a mixed-use commercial/industrial business park with an adopted Special Planning Area, state and federal environmental permits, and an accompanying habitat conservation plan. To the Airport, the park represents both a synergistic business development opportunity for aviation-related business development and a potential competitive challenge to its non-aviation commercial-property development.

Socioeconomic Setting

The economy of the Sacramento MSA is an important determinant of long-term passenger and cargo demand at the Airport and, therefore, a basis for future facilities requirements and development plans. Approximately 95% of the Airport's passengers are O&D passengers; the remaining 5% are connecting passengers.

Socioeconomic Trends

- Population – From 2011 through 2019, population in the SACOG region increased an average of 1.2% per year, while population in the State and the nation increased an average of 0.8% per year. Population growth in the SACOG region is projected to increase an average of 1.1% per year between 2019 and 2035.
- Employment – From 2009 through 2019, nonagricultural employment in the Sacramento MSA increased an average of 1.7% per year, faster than in the State and the nation (average increases of 1.1% and 1.0% per year, respectively).
- Income – From 2008 through 2017, per capita personal income in the Sacramento MSA increased an average of 2.6% per year, slower than in the state (3.2%) but consistent with the nation (2.6%). In 2017, median household income in the Sacramento MSA was $67,902, less than that in the State ($71,805), but more than the national average ($60,336). Per capita personal income in the Sacramento Region is projected to increase an average of 1.4% per year between 2019 and 2035.
- Unemployment Rate – In addition to employment trends, the unemployment rate is also indicative of general economic conditions. Unemployment rates in the primary area of the Airport and in the State have exceeded the unemployment rate in the nation as a whole since 2009.
- Nonagricultural Employment by Industry Sector – **Figure 1-6** shows the distribution of nonagricultural employment by industry sector for the Airport service region in 2018.
- Sacramento Industry Clusters – Sacramento's economy is driven by companies that export goods and services nationally and globally, bringing in new investment and jobs that support economic growth, as well as air service development. Companies in specific industry clusters tend to agglomerate because they draw competitive advantage from their proximity to competitors, a skilled workforce, specialized suppliers, and a shared base of sophisticated knowledge about their industries. The Center for Strategic Economic Research identified six industry clusters as part of the Next Economy Capital Region Prosperity Plan: agriculture and food, advanced manufacturing, information and communications technology, life sciences and health services, education and knowledge creation, and knowledge-intensive business and financial services. Clean energy technology has also been included as an industry cluster.
- Sacramento Exports – In 2016, the Sacramento economy created $7.0 billion in export activity. Computer and electronic product manufacturing (60%) and crop production (18%) together accounted for 77.8% of export value the Sacramento MSA.
- Major Employers – Education and health services together accounted for nearly half (12 of the 25) of the major employers, reflecting the importance of these industry sectors to the economy of the Sacramento Region.
- Regional Housing Market – Home prices in the Sacramento Region reached peak levels between 2004 and 2006 and began to decrease before the start of the economic recession in December 2007 to a peak loss of 36%. However, according to Sacramento Region real estate brokers and market analysts, home prices in the Sacramento Region have increased each month since June 2012, consistent with home prices in San Francisco.
- Tourism – According to the California Travel and Tourism Commission, visitor spending in the eight-county primary area of the Airport service region increased an average of 3.1% per year between 1992 and 2010, from $3.0 billion to $5.2 billion. In 2018, spending by international visitors traveling to the Sacramento MSA, according to a study conducted by CIC Research Inc. for Visit California, increased by 5.8%.

Economic Outlook

Economic activity in the Sacramento Region and the State is directly linked to the production of goods and services in the world and the rest of the United States. Both airline travel and the movement of cargo through the Airport depend on the economic linkages between and among the global, national, State, and regional economies.

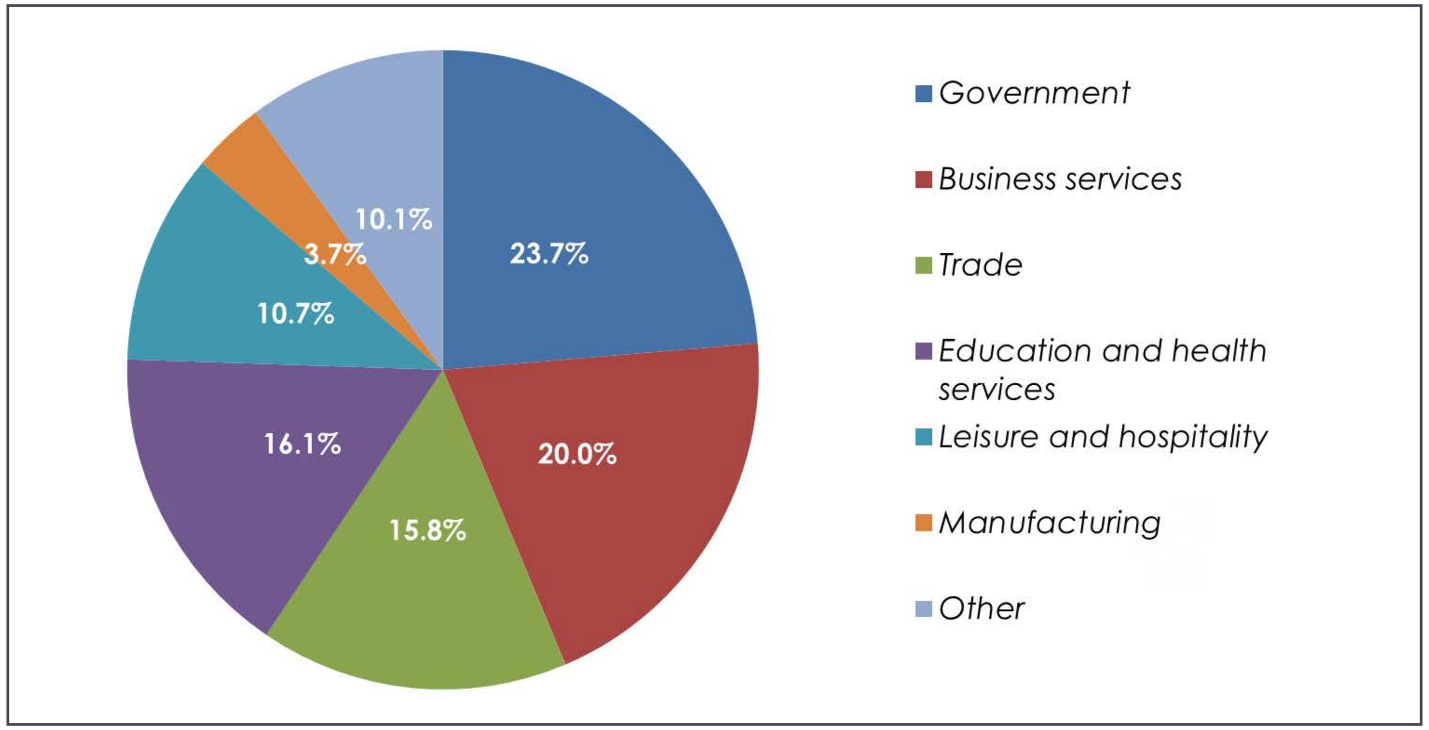
The economic outlook for world regions, the United States, the State of California, and the Sacramento Region forms a basis for forecast growth in aviation demand at the Airport. Employment and income projections for the Sacramento Region and the State of California generally support gradual but continued growth, particularly in biotechnology and pharmaceuticals, health care services, education, and leisure and hospitality services. Factors expected to contribute to economic growth in the Sacramento Region and associated increases in air travel at the Airport include: (1) the diversity of the economic base, which lessens its vulnerability to weaknesses in particular industry sectors, (2) growth in existing and emerging Sacramento industry sectors, as described earlier, (3) an educated labor force able to support the development of knowledge-based and service industries, and (4) continued reinvestment to support the development of tourism, conventions, and other businesses.

Recessions, such as those caused by the financial crisis of 2008 and the coronavirus pandemic of 2020 are expected, and will continue to impact airport activity. Because airport development is tied to planning activity levels (PALs) and not specific forecast years, the impact of the coronavirus pandemic on development will be an approximate five to 10-year delay.

Financial Setting

The Airport's Revenues, Operating Expenses, and Senior Lien Bond debt service coverage for the Airport enterprise fund is published annually on the airport website. An in-depth financial analysis of the preferred capital development program for the Airport will be provided in another section.

Figure 1-6 Distribution of Nonagricultural Employment in the Sacramento MSA in 2018



Sources: Jacobson|Daniels (Existing Property Boundary), 2019; and Memphis-Shelby County (Land Use), 2019.

1-2 AIRFIELD AND AIRSPACE

This section presents an overview of airfield facilities, airspace structure, and Air Traffic Control (ATC) procedures at the Airport. The airfield, depicted on **Figure 1-7**, consists of runways, taxiways, and apron areas, as well as lighting and navigational aids.

Runways

The Airport has two parallel runways, Runway 16L-34R and Runway 16R-34L, separated by 6,000 feet centerline to centerline. The characteristics of the runways, including their dimensions, lighting and navigational aids, pavement strength, and design standards are summarized in **Table 1-2** and **Table 1-3**.

Taxiways

Each runway has a full-length parallel taxiway, Taxiway A for Runway 16R-34L and Taxiway D for Runway 16L-34R. FAA criteria for taxiway width and taxiway shoulder width are defined in terms of the Taxiway Design Group (TDG), expressed in numerals 1 through 7, which is a function of aircraft undercarriage dimensions. The Airport regularly accommodates TDG 5 aircraft (e.g., B-767) and TDG 6 aircraft (e.g., MD-11)

Apron Areas

The primary aircraft aprons at the Airport include the passenger terminal apron, the air cargo apron to the east of Taxiway A and south of the passenger terminal, and the general aviation apron southeast of the end of Runway 34L. The apron to the north of the general aviation apron, east of Taxiway A, is also used for air cargo.

Navigational Aids

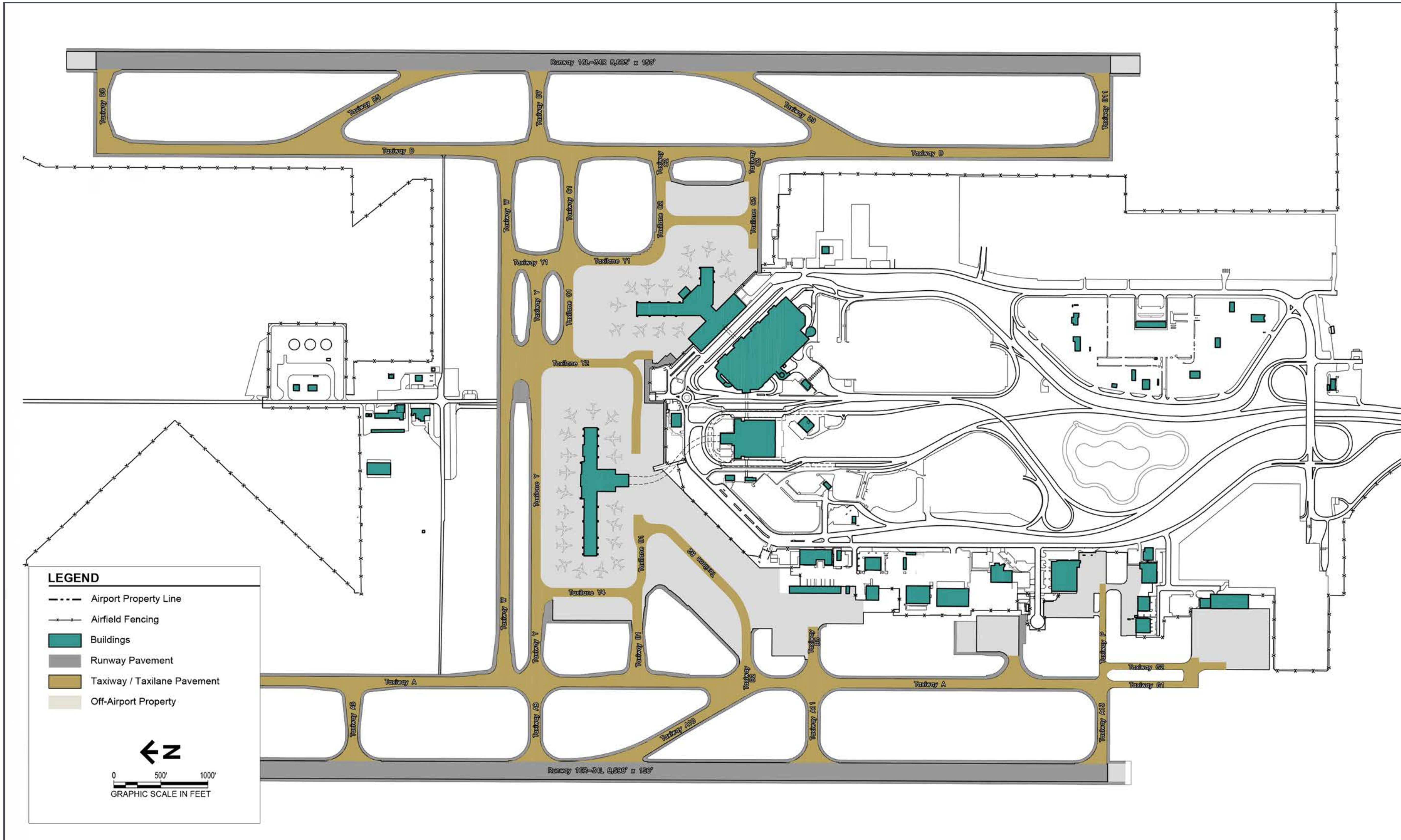
Navigational aids enable the Airport to accommodate air traffic, especially during periods of low cloud cover and reduced visibility. The navigational aids installed at the Airport enable aircraft to operate in most weather conditions. In addition to these navigational aids, an FAA Airport Traffic Control Tower (ATCT) is located south of the passenger terminal complex between the runways.

Precision Instrument Approaches

Precision instrument approach procedures to the Airport's runways allow continuous aircraft operations during periods of low visibility. Approaches available at the Airport include:

- Area Navigation (RNAV)
- Category I Instrument Landing System (ILS)
- Special Authorization (SA) Category II ILS
- Category III ILS

Figure 1-7 Airfield Facilities



Source: Sacramento County Department of Airports, 2019.

Table 1-2 Runway Characteristics

Runway	16L	34R	16R	34L
Runway pavement length (feet)	8,605	8,605	8,598	8,598
Runway pavement width (feet)	150	150	150	150
Effective gradient	0.06%	0.06%	0.03%	0.03%
Pavement type/friction	Concrete/ grooved	Concrete/ grooved	Concrete/ grooved	Concrete/ grooved
Runway end elevation (feet above mean sea level)	26.8	21.9	25.9	23.3
Runway markings	Precision	Nonprecision	Precision	Precision
Runway lighting	HIRL, CL, TDZ	HIRL, CL	HIRL, CL, TDZ	HIRL, CL
Approach aids	MALSR PAPI (P4L) LOC GS	PAPI (P4L)	ALSF-2 PAPI (P4R) LOC GS	MALSR VASI (V4L) LOC GS
Instrument runway status	Instrument	Nonprecision	Instrument	Instrument
Instrument approach procedures	ILS (SA Category II) RNAV (GPS)	RNAV (GPS)	ILS (Category I, II, III) RNAV (GPS)	ILS (Category I) RNAV (GPS)
Minimum approach decision height (feet above mean sea level)	100	292	0	200
Minimum approach visibility	1,200′ RVR	7/8 mile	600′ RVR	1,800′ RVR
Pavement strength (pounds)				
Single gear	100,000	100,000	100,000	100,000
Dual gear	209,000	209,000	209,000	209,000
Dual tandem gear	407,000	407,000	407,000	407,000
Double dual tandem gear	850,000	850,000	850,000	850,000

ALSF-2 = High-intensity approach light system with centerline sequenced flashers
CL = Centerline
GPS = Global positioning system
GS = Glide slope
HIRL = High-intensity runway lights
ILS = Instrument landing system
LOC = Localizer
MALSR = Medium-intensity approach light system with runway alignment indicator lights
N/A = Not applicable
PAPI (P4L) = Precision approach path indicator (four identical light units placed on left side of runway)
PAPI (P4R) = Precision approach path indicator (four identical light units placed on right side of runway)
RNAV = Area navigation
RVR = Runway visual range
TDZ = Touchdown zone
VASI (P=V4L) = Visual approach slope indicator (four identical light units placed on left side of runway)

Sources: Airport Layout Plan, Sacramento International Airport, 2019.
Federal Aviation Administration, Airport Master Record, 2019. | Federal Aviation Administration, Digital Terminal Procedures Publication (Version 1212), December 2012.

Table 1-3 Runway Design Standards

Land Use Area	Runways	
	16L-34R	16R-34L
Runway Design Code (a)	D-IV-2400	D-IV-1200
Approach Reference Code	D-V-2400	D-VI-1200
Departure Reference Code	D-V	D-VI
Maximum aircraft wingspan (feet)	213	261
Maximum aircraft approach speed (knots)	165	165
Approach visibility minimums	Lower than 3/4 mile (2400′ RVR)	Lower than 1/4 mile (1200′ RVR)
Standard runway width (feet)	150	150
Standard runway shoulder width (feet)	25	25
Standard runway to taxiway separation (feet)	400	400

RVR = Runway visual range

(a) The Runway Design Code and its components are defined in the text.

Source: Federal Aviation Administration Advisory Circular 150/5300–13A, Airport Design, February 26, 2014.

Approach and Runway Lighting

All runway ends except Runway 34R are equipped with approach lighting systems that assist pilots in visually recognizing the orientation and touchdown point of the runway during descent. In addition, all runways are equipped with centerline lights and high-intensity runway lights along their edges to display the edges of runway pavements during nighttime and low visibility conditions.

Approach Aids

Additional visual and instrument approach aids at the Airport include the following:

- Precision Approach Path Indicator (PAPI)
- Visual Approach Slope Indicator (VASI)
- Very-high Frequency Omnidirectional Range/Tactical Air Navigation Facility (VORTAC)
- Rotating Beacon Surface Detection

Airport Surface Detection Equipment, Model X (ASDE-X) is used to identify vehicles and aircraft movements on the airfield. This system uses surface radar and multi-lateration sensors to detect aircraft and surface vehicles on the airfield and displays position and identification information to the air traffic controllers in the ATCT. The ASDE-X radar antenna is located on top of the ATCT.

Runway Use

The direction of air traffic flow is largely dictated by prevailing wind and weather conditions, as well as noise abatement and airspace considerations. The two primary runway operational configurations at the Airport are north flow and south flow. North flow (i.e., departures and arrivals on Runways 34L and 34R) is the preferred configuration during periods of calm winds because of the Airport's voluntary noise abatement policy. However, the Airport is operated predominantly in a south flow configuration (i.e., departures and arrivals on Runways 16L and 16R) because of prevailing winds.

Taxiway Use

Runway use dictates the use of the taxiway system. In general, the full-length parallel taxiways operate in the opposite direction of the runway configuration. For example, in north flow, Taxiways A and D operate mainly southbound, and in south flow, these taxiways operate mainly northbound. Taxiway Y is mainly used to transition aircraft between the runways and the aircraft parking positions. Most often, aircraft are assigned to the runway closest to their parking position.

Airspace and Air Traffic Control

The airspace and ATC procedures that affect aircraft operations are described in this section, along with descriptions of terminal routes and ATC jurisdictions. ATC procedures were confirmed with staff from the SMF ATCT and from the Northern California Terminal Radar Approach Control (TRACON). It should be noted that the airspace and ATC procedures are under the authority and discretion of FAA.

Air Traffic Control Jurisdictions

Sacramento area airspace is under the jurisdiction of two entities: (1) the Oakland Air Route Traffic Control Center (ARTCC) and (2) the Northern California TRACON. The primary purpose of an ARTCC is to provide radar service and other ATC services to en route aircraft. The TRACON provides radar approach and departure control and other ATC services to aircraft flying in the terminal area airspace.

Controlled Airspace

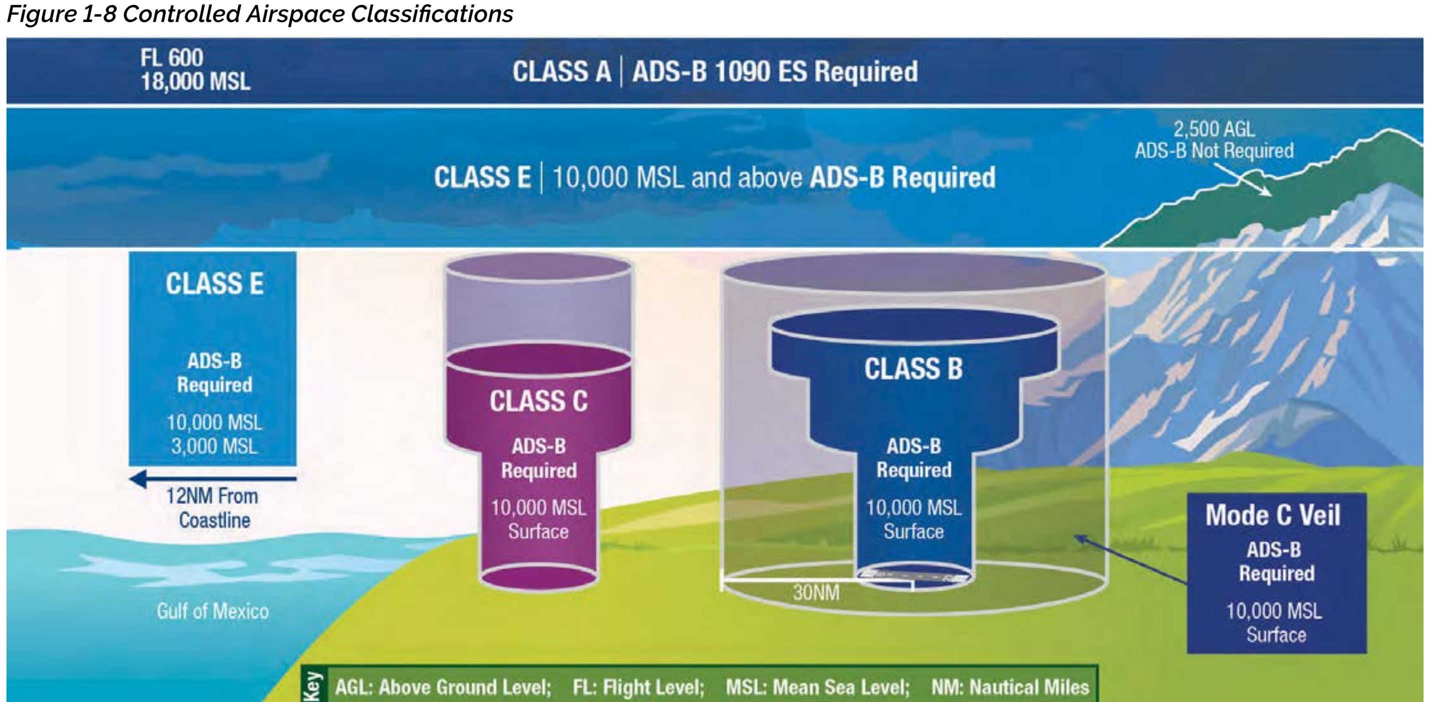
Controlled airspace has defined dimensions within which ATC service is provided to pilots in accordance with the airspace classifications established by the FAA. The United States has five classes of controlled airspace (**Figure 1-8**). Class G airspace is uncontrolled.

Airport Traffic Control Tower

The SMF ATCT provides ATC services to aircraft at, and in the immediate vicinity of, the Airport, ensuring the safe, orderly, and expeditious flow of traffic (**Figure 1-9**). The ATCT at the Airport is located south of the passenger terminal complex, between the runways. The ATCT was built in 1967 and stands 175 feet AGL.

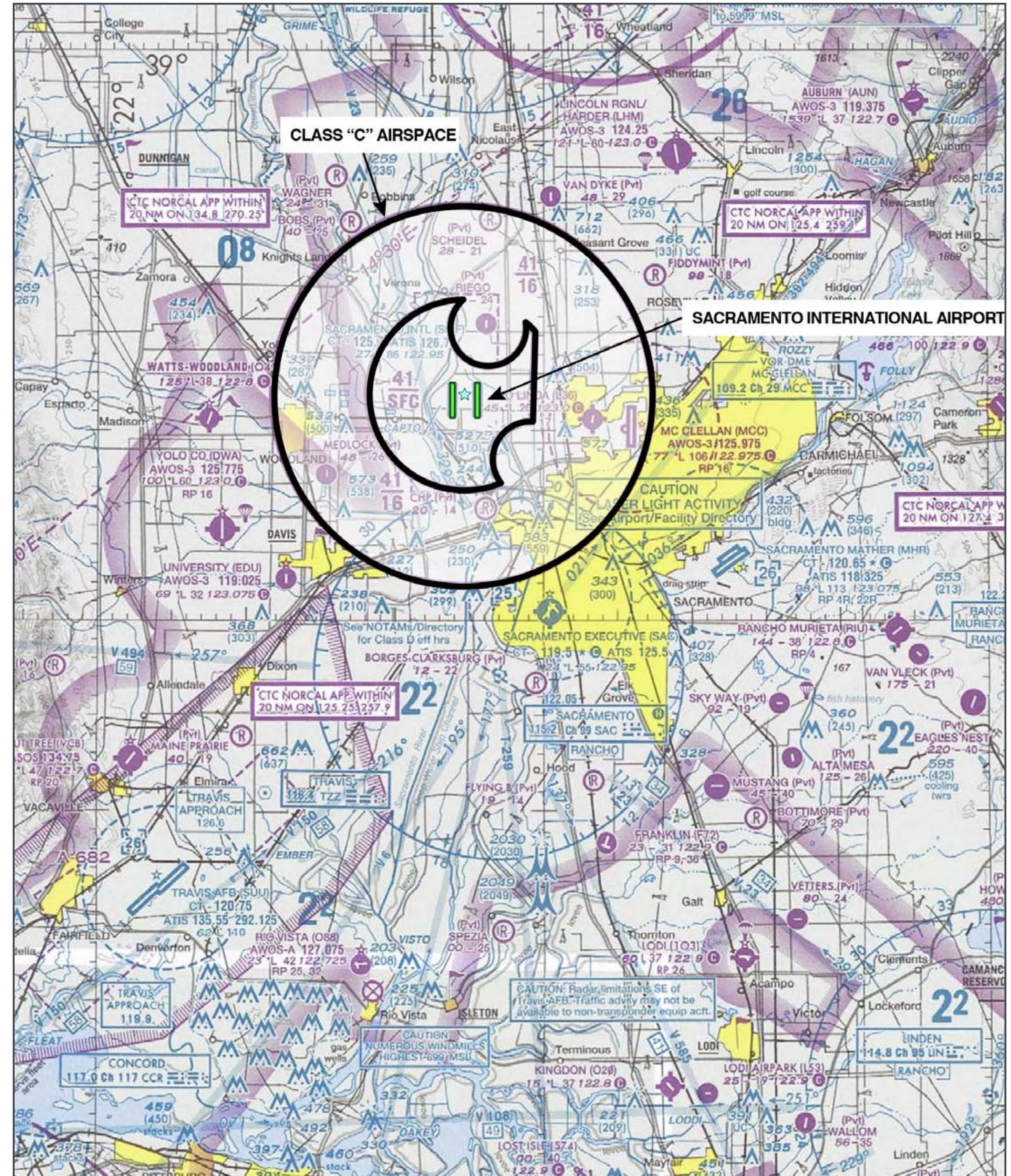
A new ATCT is to be constructed according to the FAA's schedule for tower replacements.

Figure 1-8 Controlled Airspace Classifications

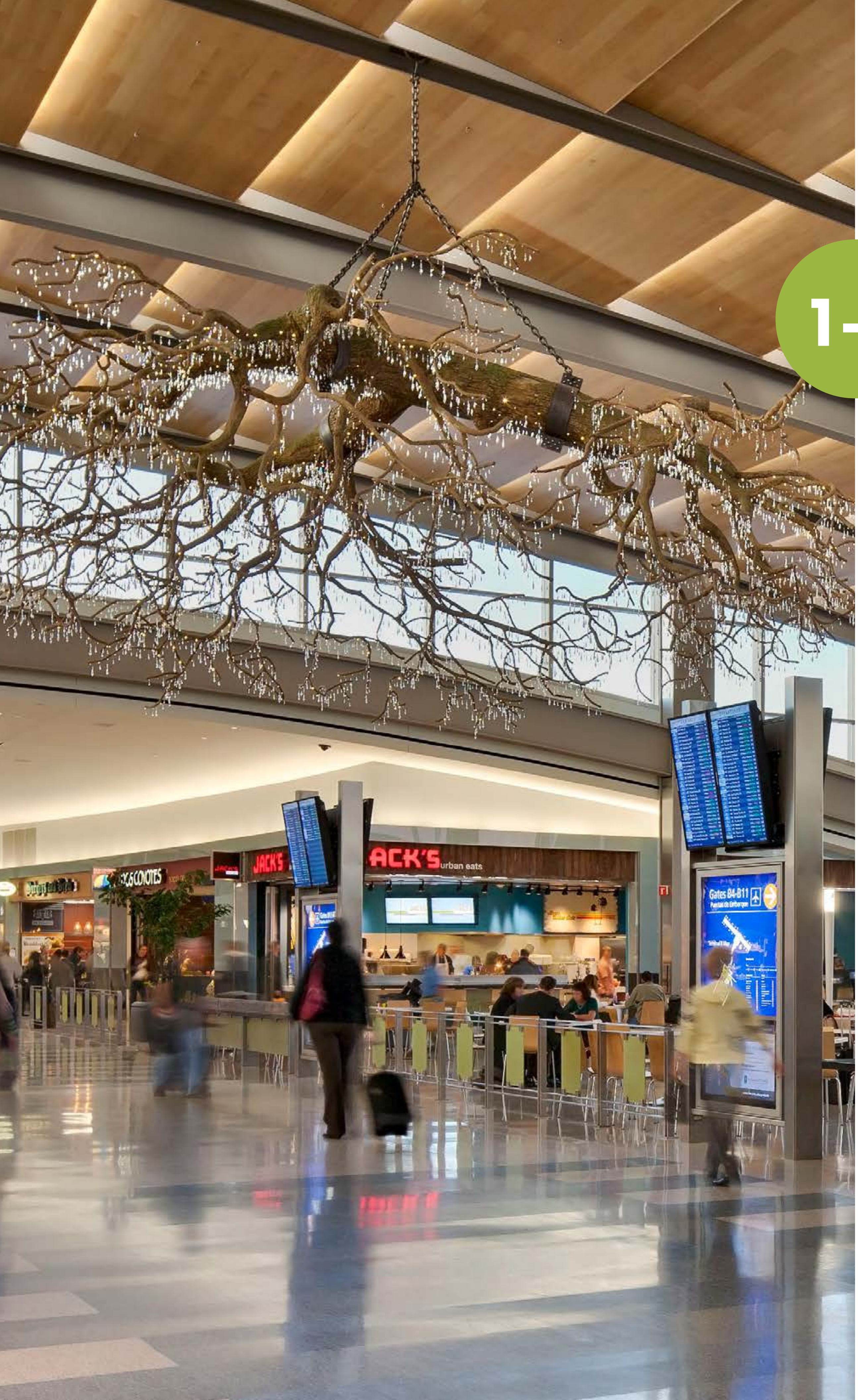


Source: Federal Aviation Administration

Figure 1-9 Sacramento Terminal Area Airspace



Source: Federal Aviation Administration



1-3 PASSENGER TERMINAL COMPLEX

The Airport passenger terminal complex is located between Runways 16R-34L and 16L-34R, south of crossfield Taxiway Y. The passenger terminal complex is defined as the two terminal buildings and associated concourses, which provide slightly more than 1,000,000 square feet of space.

When originally constructed in 1998, Terminal A provided 12 aircraft gates (also referred to as contact gates). Recent renovations to the terminal include improvements to the ticket counter area, food court, gate area, passenger meet and greet locations, checked baggage screening, and an expanded security checkpoint. Terminal B opened in late 2011 as part of The Big Build and provides 19 contact gates. The two Terminal B buildings (airside and landside) are connected by an APM system. Aircraft parking positions are shown on **Figure 1-10**. The gross areas provided in the terminal buildings are presented in **Table 1-4.**

Terminal A

Terminal A provides 337,984 square feet of space on three levels, including a basement. A six-level parking garage connects to the second level of the terminal building via a pedestrian bridge (Level 3 of the garage). Access between the garage and Terminal A is also provided at ground level via pedestrian walkways. The garage also serves Terminal B.

Level 01 of the terminal contains the passenger baggage claim devices and the baggage handling and sorting areas used by airline personnel. Additionally, airline office spaces, ground transportation, SCDA building maintenance office space, and storage and mechanical spaces are provided on Level 01. This level also contains ticket counter check-in positions, electronic kiosks for passenger check-in, airline office space, and Transportation Security Administration (TSA) checked baggage screening facilities. SCDA administration space and mechanical, electrical, and plumbing systems are provided throughout Terminal A. The allocation of space among the various functions is presented in **Table 1-5**.

Level 02 contains the TSA passenger security screening checkpoint (SSCP), several concession spaces, SCDA offices, and building mechanical rooms.

Figure 1-10 Site Plan Aircraft Parking Positions and Gates

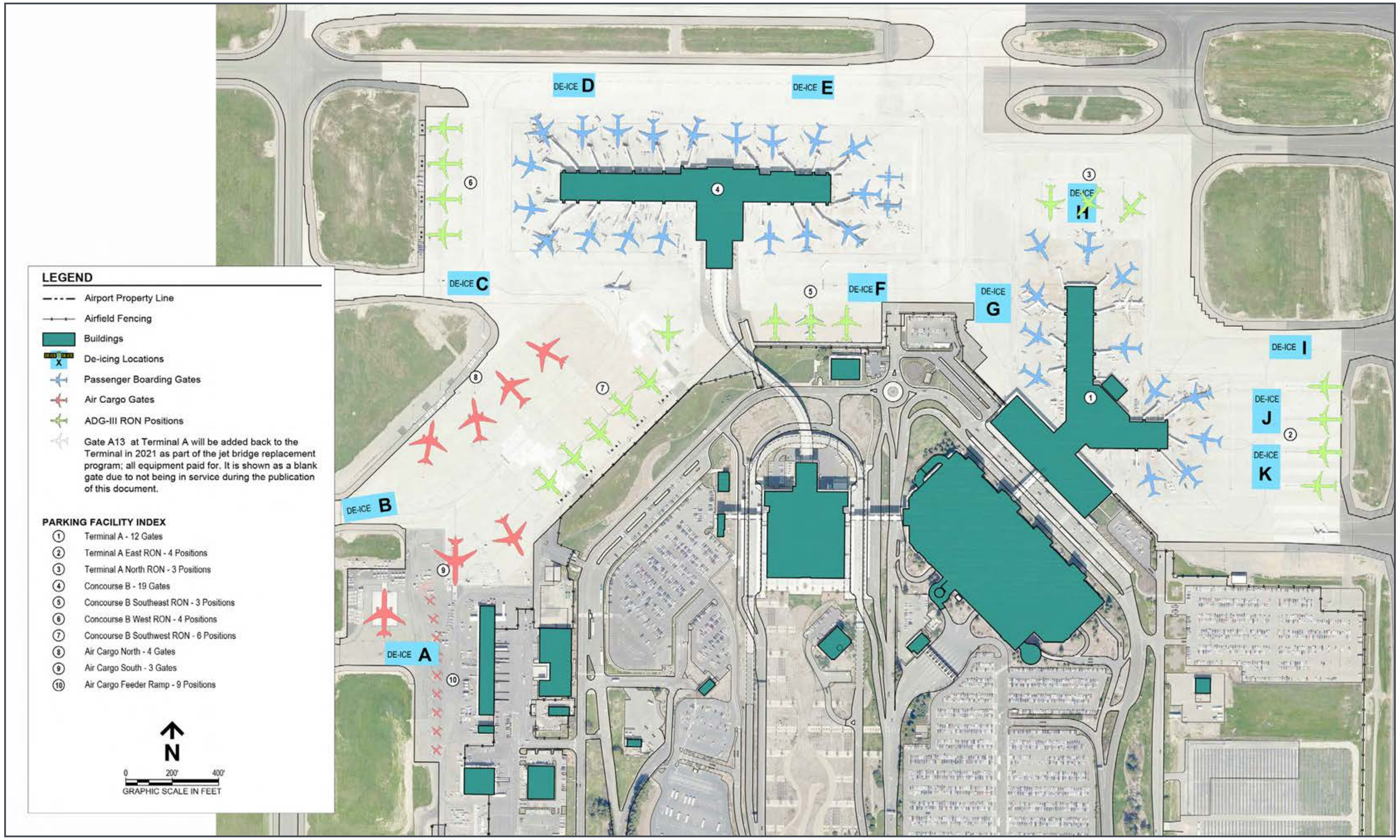


Table 1-4 Passenger Terminal Building Gross Area (square feet)

	Basement	1st Level	2nd Level	3rd Level	4th Level	Total
Terminal Buildings						
Terminal A and Concourse	5,893	176,234	155,857	--	--	337,984
Terminal B and Concourse	126,583	253,459	271,632	53,133	19,038	723,845
Total	**132,476**	**429,693**	**427,489**	**53,133**	**19,038**	**1,061,829**

Source: Sacramento County Department of Airports, 2019.

Table 1-5 Terminal/Concourse A Space Allocation (square feet)

Space Category	Total
Airline space	43,417
Airport administration (a)	25,522
Baggage claim	23,766
Baggage handling (b)	1,656
Concessions	47,379
Open/vacant	49,497
Other	45,236
Public space	82,852
Security screening	18,659
Total	**337,984**

Note: Calculations are based on gross areas measured to the outside edge of exterior walls and the center of interior walls.

(a) Includes ticket counters, outbound baggage devices, and holdrooms.

(b) Includes inbound and outbound baggage processing area, but not baggage claim or makeup devices.

(c) Includes TSA leased space within the terminal building.

Source: Sacramento County Department of Airports, 2019.

Terminal A Baggage System

Baggage claim facilities are located on Level 01 of the terminal building. Three 165-linear-foot claim devices and two 20 linear-foot oversized baggage slides are located in Terminal A for use by Delta Air Lines, United Airlines, and American Airlines. Each airline maintains a baggage resolution office on the southeast side of the baggage claim area.

Terminal A Ticketing

The Terminal A ticketing lobby provides positions for airline agents and electronic kiosks to support the check-in of airline passengers and baggage. All positions are considered common use and, although the ticket counter positions are staffed by a particular airline, 16 kiosks are available for use by any passenger of any airline. The number of positions occupied by each airline are summarized in **Table 1-6**. There are three vacant ticketing/check-in positions open at the time of this inventory. Three kiosks are located outside of the ticketing lobby (two are near TSA and one is at the passenger walkway from the parking garage).

Table 1-6 Terminal A Airline Check-In an Ticketing Positions

Airline	Agent Positions	Kiosk Positions	Skycap Positions	Total
Air Canada	4	4	--	8
American Airlines	8	8	2	18
Delta Air Lines	10	4	2	16
United Airlines	12	10	--	22
Common Use	--	13	--	13
Vacant	4	--	3	7
Total	**38**	**39**	**7**	**84**

Source: Sacramento County Department of Airports, 2019.

Terminal B

The landside portion of Terminal B provides 723,845 square feet of space on five levels, including a basement. A six-level terminal parking garage, shared between Terminals A and B, connects to Terminal B on Level 03 (Level 05 of the parking garage) and a surface parking lot connects with Terminal B on Level 01 (west of Terminal B). SCDA administration space and mechanical, electrical, and plumbing systems are provided throughout the facility. The allocation of space among the various functional uses in Terminal B is presented in **Table 1-7**.

Table 1-7 Terminal/Concourse B Space Allocation (square feet)

Space Category	Total
Airline space (a)	107,885
Airport administration	38,672
Baggage claim	92,761
Baggage handling (b)	1,784
Concessions	53,134
Customs and Border Protection (c)	37,657
Open/vacant	48,233
Other	113,907
Public space	189,979
Security screening (d)	39,833
Total	**723,845**

Note: Calculations are based on gross areas measured to the outside edge of exterior walls and the center of interior walls.
(a) Includes ticket counters, outbound baggage devices, and holdrooms.
(b) Includes inbound and outbound baggage processing area, but not baggage claim or makeup devices.
(c) Includes all space allocated for Customs and Border Protection and dual-use sterile corridor.
(d) Includes TSA leased space within the terminal building.

Source: Sacramento County Department of Airports, 2019.

Level 00 contains baggage sortation and screening facilities, TSA offices and break rooms, maintenance space for building and baggage handling systems contractors, airline and baggage handling operator break areas, and mechanical and electrical rooms.

Level 01 contains the passenger baggage claim devices and baggage resolution offices used by airline personnel. The facility's Central Utility Plant and loading dock are also located on this level.

Level 02 contains the airline ticket counters and offices, a "quiet room," SCDA offices, and building mechanical and electrical rooms.

Level 03 is the primary public circulation level of the building and contains concession areas, a small museum/exhibit area, a vacant concession area, and the APM station, which connects the terminal to the concourse. Pedestrian bridges connecting the terminal to the parking garage and the hourly surface parking lot are also located at this level.

Level 04 consists of SCDA offices, a public lobby/meeting room, and mechanical and electrical rooms.

Terminal B Baggage System

Four 180-linear-foot baggage claim carousels and one 20-linear-foot oversized baggage claim device, used by all 12 airlines operating in Terminal B, are located on Level 01 of Terminal B. Outbound baggage facilities are located on Levels 00 and 02 of Terminal B. The baggage systems are owned and maintained by SCDA (not the individual airlines).

Terminal B Ticketing

The Terminal B ticketing lobby provides positions for airline agents and electronic kiosks to support the check-in of airline passengers and baggage. The number of positions occupied by each airline are summarized in **Table 1-8**. Three kiosks are located outside of the ticketing lobby (Level 03 near the passenger walkway from the parking garage).

Table 1-8 Terminal B Airline Check-In and Ticketing Positions

Airline	Agent Positions	Kiosk Positions	Skycap Positions	Total
Aeromexico	6	--	--	6
Alaska Airlines/ Horizon Air	6	6	--	12
Boutique Air	1	--	--	1
Contour Airlines	2	--	--	2
Frontier Airlines	6	--	--	6
Hawaiian Airlines	6	6	--	12
JetBlue Airways	6	--	--	6
Southwest Airlines	22	12	6	40
Spirit Airlines	6	6	--	12
Sun Country Airlines	2	--	--	2
Volaris	6	6	--	12
Common Use	--	11	--	11
Vacant	27	--	4	31
Total	**96**	**47**	**10**	**153**

Source: Sacramento County Department of Airports, 2019.

Concourse A

Concourse A provides 12 contact gates and facilities on two levels. A 13th contact gate is scheduled to come back on-line in the near future. Airline, concession, and building maintenance space, as well as mechanical, electrical, and plumbing systems are provided throughout the facility.

Level 01 contains airline operations offices and spaces for airline personnel, building, and baggage maintenance functions.

Level 02 contains the TSA SSCP, a concession mall/food court, lounge, and holdrooms for airline passengers.

Concourse B

Concourse B provides 19 contact gates and approximately 300,000 square feet of space on two levels. An APM connects the concourse with Terminal B on Level 02. Airline, concession, and building maintenance space, as well as mechanical, electrical, and plumbing systems, are provided throughout the concourse.

Level 01 contains the main FIS facility used by customs and border protection (CBP) to process incoming passengers and baggage for international flights. Airline operations offices and spaces for airline personnel are also located on this level, as well as building and APM maintenance functions

Level 02 contains the TSA SSCP, a concession mall/food court, lounge, and holdrooms for airline passengers.

Aircraft Parking Apron

Approximately 108 acres of apron are available for aircraft maneuvering and parking at the passenger terminals. The apron is currently configured to accommodate aircraft ranging from small turboprop aircraft to large wide body aircraft during normal operations. There are currently 31 contact gates and 20 RON parking positions. The largest aircraft that can be accommodated at each parking position is identified in **Tables 1-9** and **1-10**, for Concourse A and Concourse B, respectively.

Transportation Security Administration

The TSA passenger SSCP is located on Level 02 of Terminal A (seven lanes). In Terminal B, passengers disembark the APM and enter a large SSCP lobby (ten lanes) where they are screened and processed into the secure passenger environment.

All SSCPs provides a metal detector, millimeter wave, and x-ray screening of passengers and carry-on baggage to facilitate access to the sterile concourse areas. Separate queues are provided for employees, TSA Pre-check passengers, premium passengers and elite members of frequent flyer programs, and Known Crew Members.

U.S. Customs and Border Protection

Gates B8 and B10 along the north side of Concourse B have secure corridors that connect the passenger loading bridges (PLBs) to the Airport's CBP screening facility. The CBP facility occupies approximately 40,000 square feet at Level 01 of Concourse B.

Table 1-9 Summary of Concourse A Passenger Gates

Gate	Assignment (a)	Gate type	Largest aircraft
A1	Delta	Bridge	B752-200W
A2	American	Bridge	B752-200W
A3	Delta	Bridge	B767-300
A4	American	Bridge	B767-300
A5	American	Bridge/ Ground	B767-300ER
A6-A9	NUMBERS RESERVED FOR FUTURE USE		
A10	Delta	Bridge	B737 MAX10 / A321
A11	(b)	Bridge	B752-200W
A12	Delta	Bridge	B737 MAX10 / A321
A13	(b)	Bridge	B737 MAX10 / A321
A14	United	Bridge	B737 MAX10 / A321
A15	United	Bridge	B767-300W
A16	United	Bridge	B737 MAX10 / A321
A17	United	Bridge/ Ground	B777-200ER

(a) Gates are not exclusive use, but are preferentially used by the airlines indicated and their regional affiliates.
(b) Unassigned common use.

Source: Sacramento County Department of Airports, 2019.

Table 1-10 Summary of Concourse B Passenger Gates

Gate	Assignment (a)	Gate type	Largest aircraft
B1-B3	NUMBERS RESERVED FOR FUTURE USE		
B4	(b)	Bridge	A330-200
B5	Alaska	Bridge/Ground	B777-300ER
B6	(b)	Bridge	B737 MAX10 / A321
B7	Alaska	Bridge	B737 MAX10 / A321
B8	(b)(c)	Bridge/Ground	B787-8
B9	Alaska	Bridge	B737 MAX10 / A321
B10	(b)(c)	Bridge/Ground	B737 MAX10 / A321
B11	Spirit	Bridge	B737 MAX10 / A321
B12	Southwest	Bridge	B737 MAX 9
B14	Southwest	Bridge	B737 MAX10 / A321
B15	Southwest	Bridge	B737 MAX10 / A321
B16	Southwest	Bridge	B737 MAX 8
B17	Southwest	Bridge	B737 MAX10 / A321
B18	Southwest	Bridge	B737 MAX 9
B19	Southwest	Bridge	B737 MAX10 / A321
B20	Southwest	Bridge	B737 MAX 8
B21	Southwest	Bridge	B737 MAX 9
B22	(b)	Bridge	B737 MAX 8
B23	Southwest	Bridge	B737 MAX 8

(a) Gates are not exclusive use, but are preferentially used by the airlines indicated and their regional affiliates.
(b) Unassigned common use.
(c) International gate.

Source: Sacramento County Department of Airports, 2019

1-4 GROUND ACCESS AND PARKING

This section summarizes the capacities and locations of key ground access and parking facilities and related operations at the Airport. This includes access and circulation roadways, terminal area and curbside roadways, public and employee parking facilities, rental car facilities, shuttle bus operations, commercial vehicle facilities and operations, and public transit services.

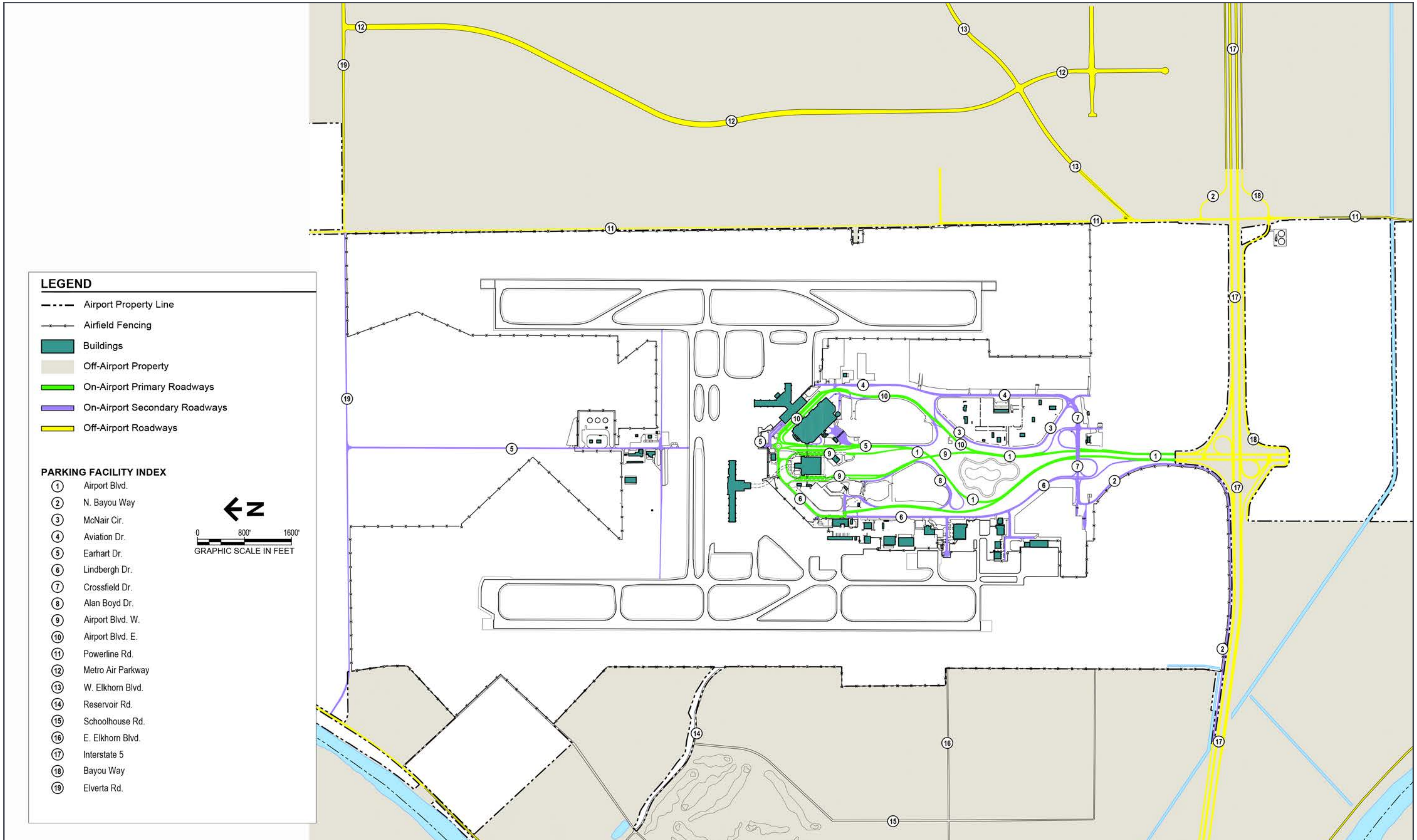
Access and Circulation Roadways

Primary access to the Airport is provided from the south via I-5 and Airport Boulevard. Airport Boulevard, which is two lanes wide with both lanes heading in the same direction, then provides access to the passenger terminals and all other Airport facilities located south of Taxiway W. Alternative south access is also provided via North Bayou Road, which is two lanes wide, with one lane per direction of travel. Access from the north to the Airport facilities located north of Taxiway Y (including the fuel farm, the ARFF station, and various maintenance facilities) is via West Elverta Road, which is an off-airport roadway, and Earhart Drive, which varies between two and three lanes, with travel in both directions. These access roadways are shown on **Figure 1-11**.

Daily traffic volumes were recorded on Airport Boulevard during a two-week observation period between July 19th and August 3rd, 2017 for inbound (northbound) and outbound (southbound) traffic, respectively. While the highest daily inbound volume of the two-week observation period occurred on a Thursday, the highest daily outbound volume occurred on a Monday.

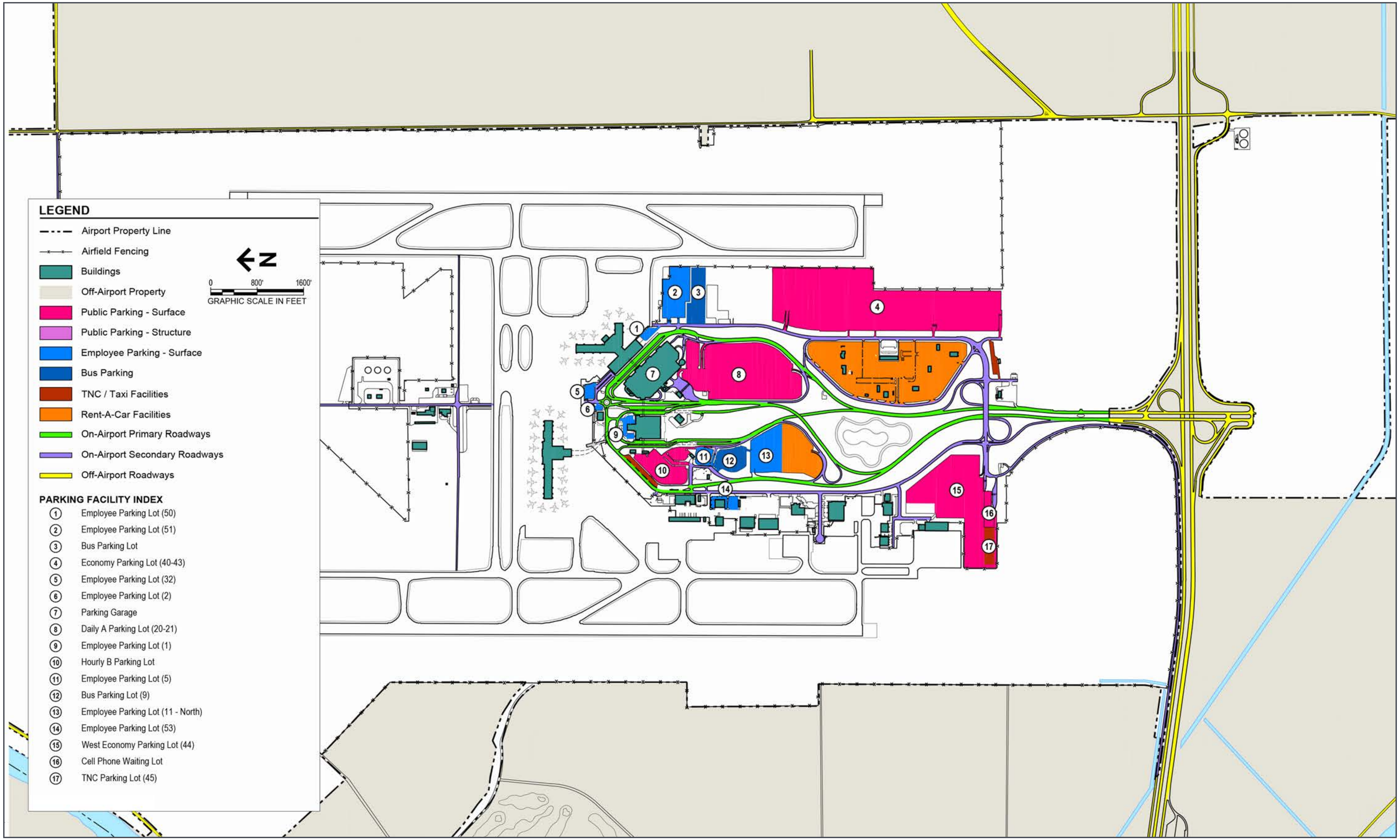
The highest inbound hourly volumes occurred between 4:00 a.m. and 5:00 a.m. and again between 11:00 a.m. and 12:00 p.m. It was recorded that the peak volume for rolling hourly outbound traffic was between 12:00 p.m. and 1:00 p.m., at approximately 1,400 vehicles.

Figure 1-11 Ground Access and Parking Facilities



Source: Sacramento County Department of Airports, 2019.

Figure 1-12 Existing Parking Facilities



Source: Sacramento County Department of Airports, 2019.

Terminal Area and Curbside Roadways

The terminal areas are served by a one-way roadway system with each terminal served by an independent loop roadway.

Terminal A Curbside

The one-way loop roadway serving Terminal A proceeds counter-clockwise through the terminal area. The loop road provides access to the Terminal A curbside, the garage, the Daily Parking Lot, employee parking lots located on each side of Terminal A, and the commercial vehicle plaza located at the west end of Terminal A.

The Terminal A curbside is a single-level roadway serving the ticketing areas on the east side of the terminal and baggage claim areas on the west side of the terminal. The inner curbside roadway, which is located immediately adjacent to the terminal, consists of five lanes, with two lanes reserved for active loading and unloading of passengers and three travel lanes.

The commercial vehicle plaza located at the west end of Terminal A, immediately outside of baggage claim, provides reserved loading areas for taxicabs, shared-ride vans, limousines, transportation network company (TNC), and courtesy vehicles operated by hotels and motels.

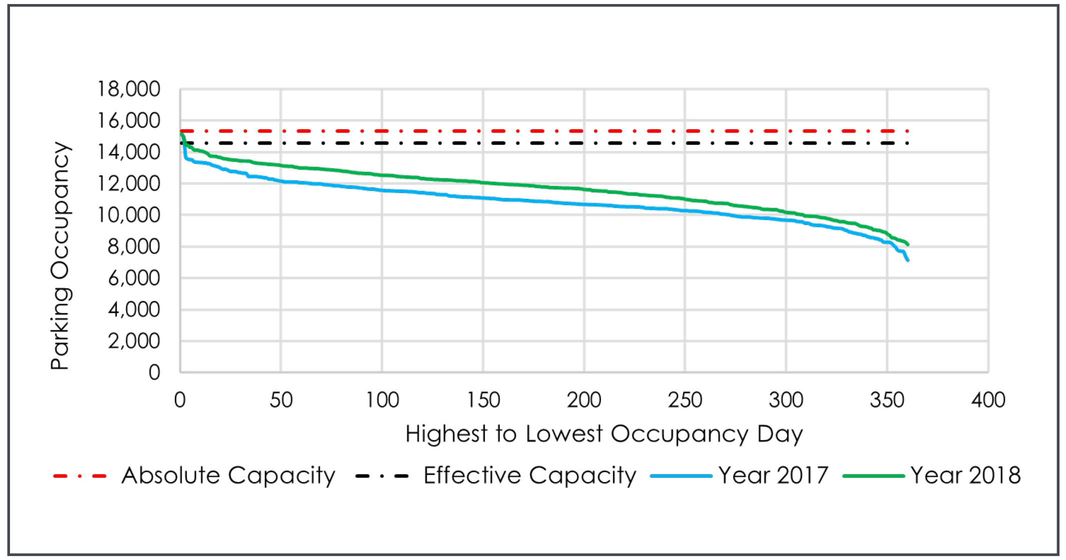
The outer curbside is reserved for Yolo Transit buses and Airport-operated shuttle buses serving the Economy Parking Lot, Surface Parking Lot A, and the rental car facility. The curbside roadways have four pedestrian crosswalks providing access between the terminal building, the outer curbside, and the garage.

Terminal B Curbside

The one-way loop roadway serving Terminal B proceeds clockwise through the terminal area. The loop road provides access to the Terminal B curbsides, the Hourly Parking Lot B and the ATCT.

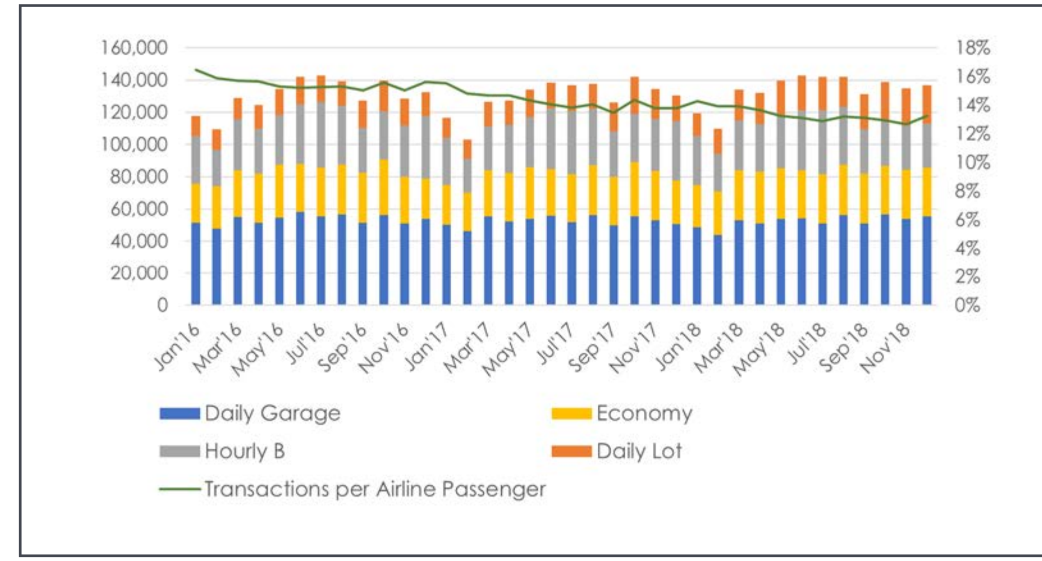
The Terminal B curbside is a two-level loop roadway. The upper level loop consists of a west side drop-off curbside serving Southwest Airlines, followed by an east side drop-off curbside serving all other Terminal B airlines. The upper level loop consists of four lanes with two lanes reserved for active unloading of passengers and two travel lanes.

Figure 1-13 Parking Occupancy



Source: Sacramento County Department of Airports, 2019.

Figure 1-14 Historical Parking Transactions



Source: Sacramento County Department of Airports, 2019.

The lower level loop consists of two parallel roadways, an inner curbside (located adjacent to the building) serving private vehicles, and an outer curbside reserved for commercial vehicles. The lower level inner curbside consists of a west side pickup curbside serving Southwest Airlines, followed by an east side pickup curbside serving all other Terminal B airlines. The lower level outer curbside consists of a west side pickup curbside reserved for taxicabs, limousines, shared-ride vans, and courtesy vehicles operated by hotels and motels. The east side pickup curbside is reserved for Yolo Transit buses, the inter-terminal shuttle bus, Airport-operated shuttle buses serving the Economy Parking Lot, Surface Parking Lot A, and the rental car facilities. There is also a path to the TNC pickup area north of the Hourly B Parking Lot.

Existing Parking Facilities

The Airport provides approximately 7,400 "close-in" public parking spaces out of approximately 18,500 total public parking spaces, or approximately 40%, with the balance considered remote. Prior to the renaming of the overflow parking lot as the West Economy Lot, approximately 45% of total airport parking demand was accommodated by close-in facilities. **Table 1-11** summarizes the capacities of the public parking facilities. Existing public parking facilities at SMF are shown on **Figure 1-12**.

Table 1-11 Public Parking Facilities

Parking facility	Capacity (spaces)	Notes
Garage (six levels)	5,255	Includes hourly and daily parking areas
Surface Parking Lot A	3,052	
Hourly Parking Lot B	618	
Daily Parking Lot B	1,668	Currently closed to the public
Economy Parking Lot	6,585	
West Economy Parking Lot	2,370	
Cell Phone Parking Lot	147	
Total spaces	19,695	
Total spaces in operation (August 2019)	18,027	Excludes Daily Parking Lot B

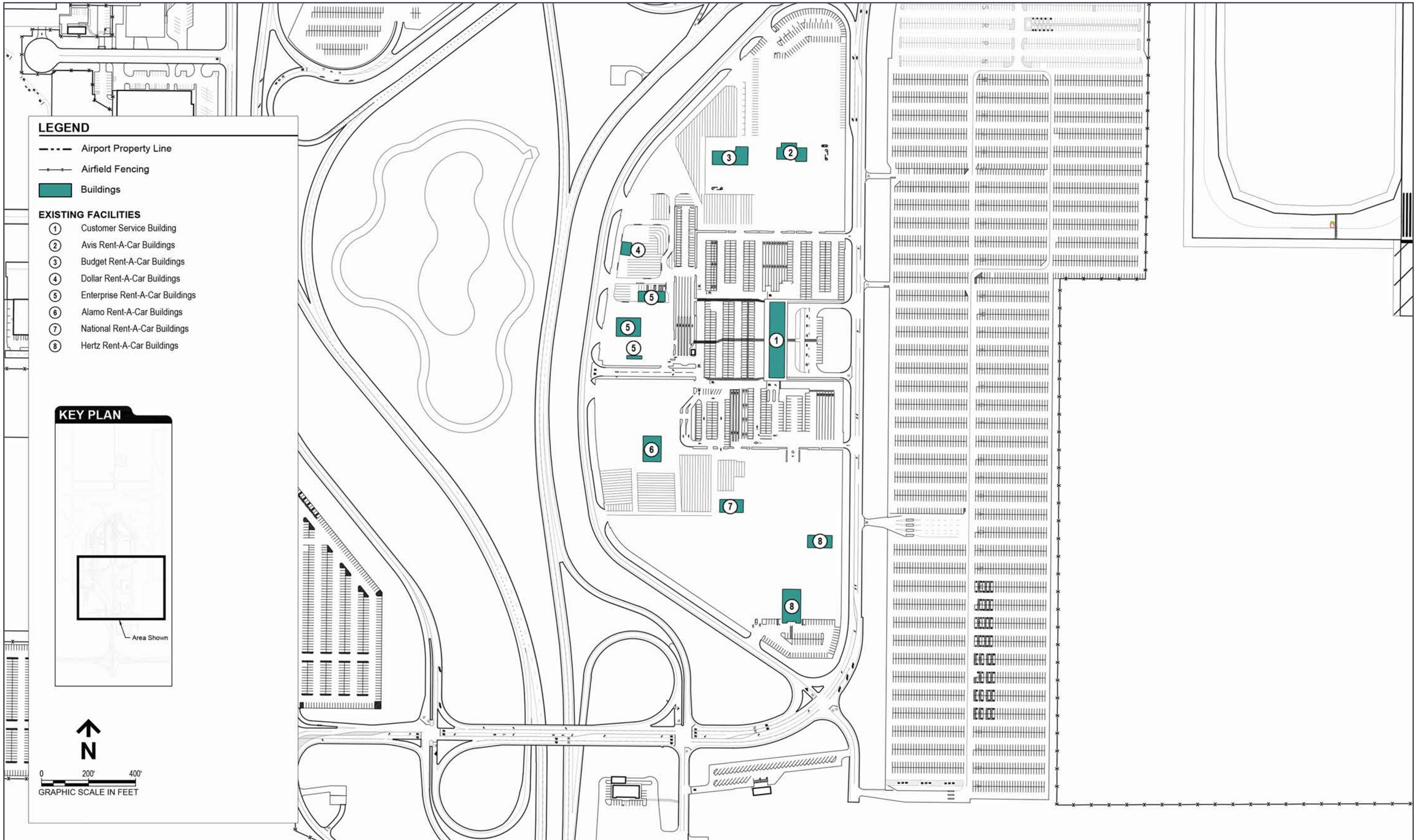
Source: Sacramento County Department of Airports, 2019.

Parking Activity

In 2017, the Airport public parking facilities generated approximately $58,142,000 in gross revenues. **Figure 1-13** depicts the parking occupancy for all public parking facilities at the Airport combined in 2017 and 2018.

While the total annual parking transactions increased by 2.37% in last three years (2016-2018), transactions per airline passenger decreased during the same time period. The monthly average transactions per 100 airline passengers were 15.5 in year 2016, which dropped to 13.3 in year 2018. This decrease is also reflected in gross revenue earned from public parking. **Figure 1-14** exhibits that the parking revenue per passengers is slowly declining over time. However, the gross revenue from public parking experiences a steady growth over the same time period primarily due to an increased parking fee.

Figure 1-15 Rental Car Facilities



Source: Sacramento County Department of Airports, 2019.

Employee Parking Facilities

SCDA provides parking for Airport and tenant employees in eight parking facilities at the Airport with a total capacity of 1,784 spaces.

Rental Car Facilities

The rental car facilities, as shown on **Figure 1-15** accommodate ten rental car brands using seven facilities. Payless, Zip Car, and Thrifty share facilities with other brands. The facilities consists of customer areas, including a customer service building and ready/return parking areas, and service centers that each rental car company uses for fueling, washing, and light maintenance of rental cars. **Table 1-12** summarizes the areas within the rental car facilities.

Figure 1-16 exhibits total annual rent-a-car (RAC) transactions for the last five years (2014-2018). Total annual transactions reflect a 18.9% growth over that time period.

Shuttle Bus Operations

The SCDA currently operates four shuttle bus routes serving passengers and employees. **Table 1-13** summarizes the routes, areas served, and typical frequency.

Commercial Vehicle Facilities

In addition to the commercial vehicle facilities located within the terminal area, the Airport provides a staging area located east of the gas station (located at the south end of Airport Boulevard) for taxicabs and shared-ride vans awaiting dispatch to the terminal area. The staging area is currently striped to accommodate 46 vehicles and has a 720 square-foot lounge and restroom facility for the commercial operators.

The Airport signed an agreement to allow TNCs to serve airline passengers in September 2015. Since then, the transactions of TNCs have increased annually, reaching 3.4% of the total ground transportation mode share in January 2016, and over 11% at the end of year 2018. Due to the higher volume of TNCs, the Airport has allocated two designated pick-up locations for TNC passengers.

Public transit services

Public transit service to the Airport is provided by Yolo Transit, which operates two routes serving the Airport.

Table 1-12 Rental Car Facilities

	Capacity	
Facility	**Units (if applicable)**	**Area (square feet)**
Customer service building	--	12,941
Ready/return area	848 spaces	329,377
Service centers/rental car storage	--	1,252,238
Total		**1,594,556**

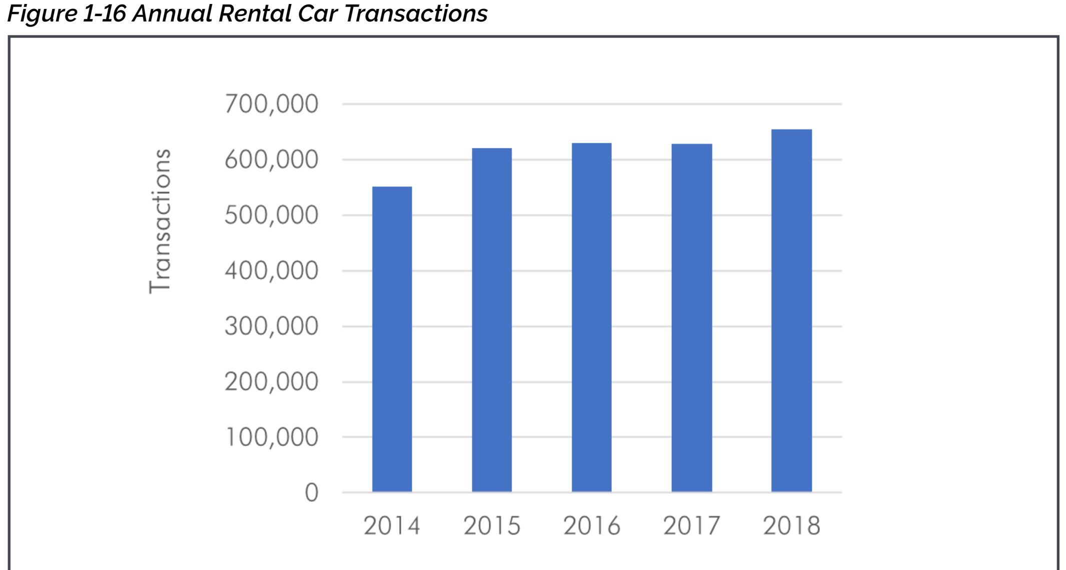
Source: Sacramento County Department of Airports, 2019.

Table 1-13 Shuttle Buses

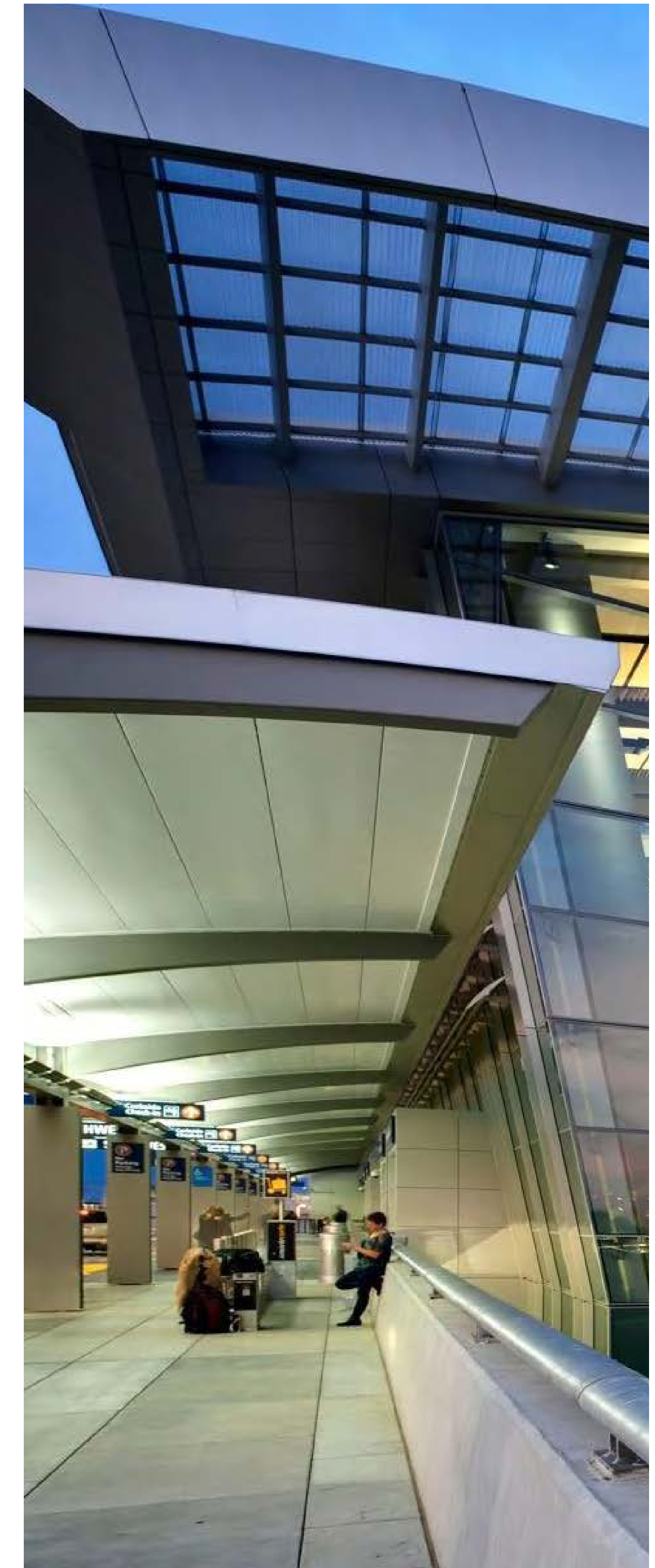
Shuttle route	Terminal-Area Stop Locations	Typical Frequency	Loop Time and Length
Daily A	Terminal A (check-in) Terminal A (baggage claim) Terminal B (East Commercial Curb) Daily A Lot	15 to 20 minutes	8 to 10 minutes, 1.3 miles
West and East Economy Lots (2 routes)	Terminal A (check-in) Terminal A (baggage claim) Terminal B (East Commercial Curb) Economy Lot	25 to 30 minutes	Up to 60 minutes, 3.5 miles
Rental Car	Terminal A (check-in) Terminal A (baggage claim) Terminal B (East Commercial Curb) Rental Car Center	5 to 10 minutes	10 to 12 minutes, 2.8 miles

Source: Sacramento County Department of Airports, 2019.

Figure 1-16 Annual Rental Car Transactions



Source: SMF Rental Car Transaction/Transaction Day Questionnaire, January 2019.



1-5 AIR CARGO

Air cargo facilities are depicted on **Figure 1-17**, and include the air cargo building, the United Air Freight building, and the United States Postal Service (USPS) facility. Six cargo airlines serve the Airport: ABX Air, Amerijet, Air Transport International (ATI), Atlas Air, FedEx and Westair Industries. Worldwide Flight Services, a ground handling company, loads and unloads cargo for ABX Air, ATI, and Atlas Air. Cargo carried in the belly compartments of passenger aircraft, particularly U.S. mail, is accommodated at the USPS facility on the Airport. SMF is eligible for Cargo Entitlements as more than 100 million pounds of cargo from cargo-only aircraft lands at the Airport. These facilities are aging and require substantial improvements to be able to effectively accommodate cargo operations and growth.

FedEx

FedEx occupies approximately 4,500 square feet of office space, 735 square feet of storage space, and 9,700 square feet of warehouse space in the northern portion of the air cargo building, which was built in 1985. FedEx aircraft park at three designated aircraft parking positions near the air cargo building. FedEx also leases approximately 101,000 square feet of apron/paved space for loading and unloading of aircraft and for equipment storage. This apron area is located immediately west of the air cargo building.

Other Air Cargo

Worldwide Flight Services delivers air cargo for other cargo companies at the Airport. The new Aeroterm cargo facility built in former Parking Lot 54 is also used by Worldwide Flight Services and other cargo companies.

Passenger Airlines

United Air Freight occupies approximately 1,700 square feet of office space and 10,000 square feet of warehouse space in the United Air Freight building, which was built in 1967. United Air Freight also leases approximately 22,400 square feet of apron/paved space adjacent to the building.

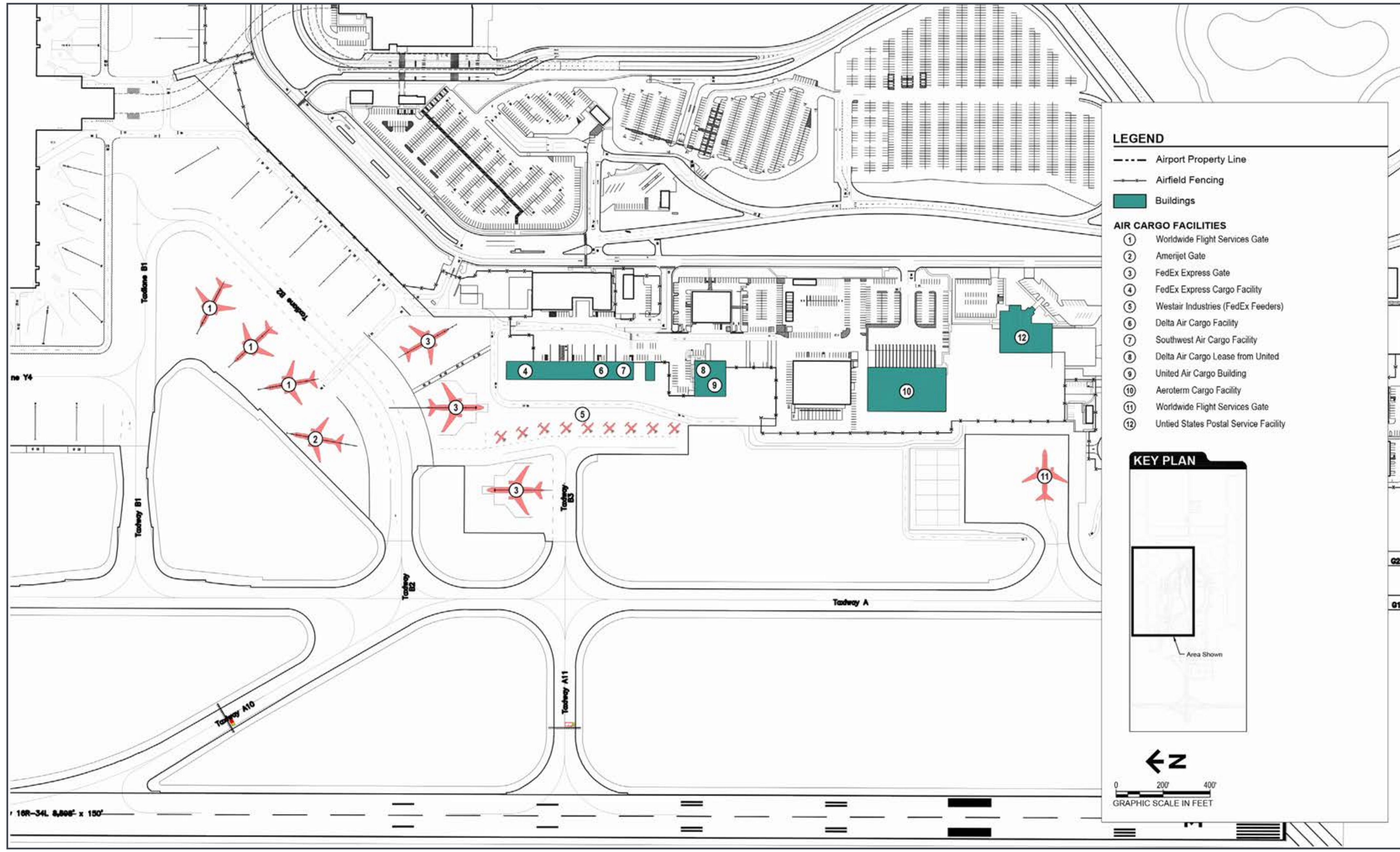
Delta Air Lines occupies space in the air cargo building and approximately 500 square feet of office space and 2,200 square feet of warehouse space in the United Air Freight building. Delta Air Lines also leases 3,300 square feet of apron area in front of the facility.

Southwest Airlines occupies approximately 3,900 square feet of office space, 2,000 square feet of storage space on the mezzanine, and 7,600 square feet of warehouse space in the southern portion of the air cargo building. Southwest Airlines leases approximately 13,400 square feet of apron area adjacent to its assigned spaces in the air cargo building.

United States Postal Service

The USPS Airport Mail Facility is located on Lindbergh Drive adjacent to the employee parking lot, which was built in late 1980s. This 19,000-square-foot facility includes a public service (vending) center and mail sort/transfer operation. Secure access via a tug road links this facility to the Airport terminal aprons for pickup/deliveries to and from aircraft. USPS is currently served by Amerijet.

Figure 1-17 Air Cargo Facilities



Source: Sacramento International Airport Master Plan, August 2019.

1-6 GENERAL AVIATION AND FAA FACILITIES

The Airport is home to a Fixed-Base Operator (FBO) serving the general aviation community, a Specialized Aviation Service Operator (SASO), and a FAA Flight Inspection Field Office (FIFO). **Figure 1-18** shows the GA and FAA facilities. **Table 1-15** summarizes the apron and hangar space associated with each facility. Aging facilities require investment and improvement to accommodate growing operations.

Sacramento Jet Center

The Airport's FBO, SACjet, is located immediately west of Lear Drive and east of Taxiways G-1 and G-2. SACjet provides a complete range of general aviation services, including fueling (both JetA and 100LL), onsite rental car, customs, ground handling, hangar storage, oxygen and potable water, concierge, and catering services, as well as lounge and office space and an on-call avionics and maintenance technician.

The SACjet site consists of a 40,000-square-foot hangar used for aircraft storage and maintenance and a 6,500-square-foot building that accommodates the FBO's administrative offices, a pilots' lounge, and other crew and passenger amenities. The facilities were built in 2010. SACjet also operates and maintains 12,000 square feet of hangar space and 15,000 square feet of apron space west of the FAA FIFO hangar.

Textron Aviation Sacramento Service Center

The Airport's SASO, the Textron Aviation Sacramento Service Center (Sacramento Service Center), is located immediately south of Citation Way, north of Taxiway P and east of Taxiway A. Sacramento Service Center staff are capable of serving all Citation, Caravan, Beechcraft, and Hawker products. Their services include airframe inspections and maintenance, avionics troubleshooting and modifications, and inspections and coordination of overhauls.

FAA Flight Inspection Field Office

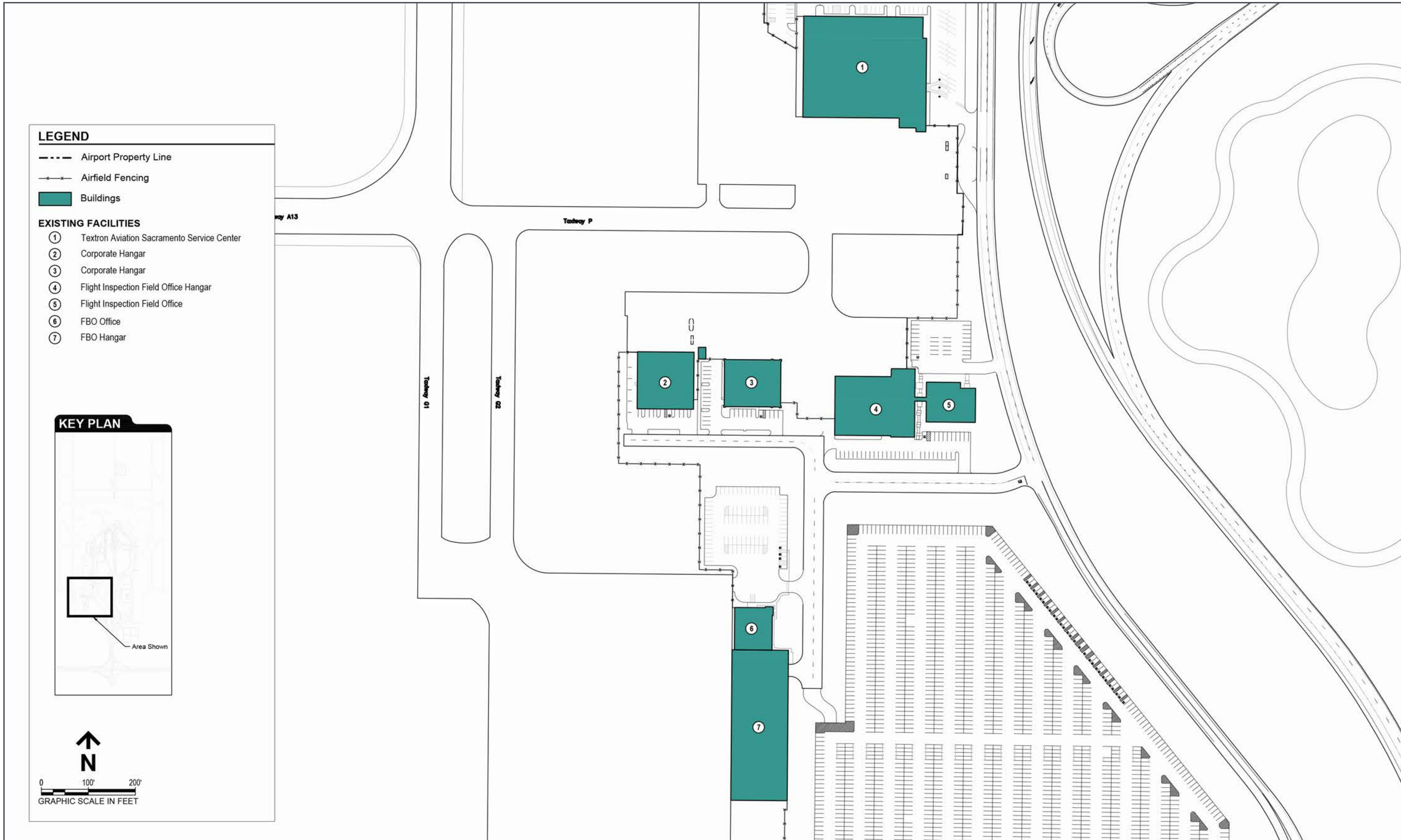
The FAA FIFO performs flight inspection activities to certify navigational aids and instrument flight procedures for the Sacramento region. The FIFO hangar and office facilities are located immediately west of Lindbergh Drive and south of Taxiway P.

Table 1-14 General Aviation and FAA Facilities (square feet)

Facility	Hangar space	Apron area
Sacramento Jet Center	40,000	340,000
Textron Aviation Sacramento Service Center	57,362	78,000
Corporate Hangar (west)	14,540	10,000
Corporate Hangar (east) (a)	12,000	15,000
FAA Flight Inspection Field Office Hangar and Building	31,016	24,000

(a) The facility is leased by SACjet.
Source: Sacramento County Department of Airports records, 2019.

Figure 1-18 General Aviation Site



Source: Sacramento International Airport Master Plan, August 2019.

1-7 AVIATION SUPPORT

Aviation support facilities at the Airport include Aircraft Rescue and Firefighting (ARFF), in-flight catering, Airport administration, aircraft fuel storage, and airline support facilities, as well as Airport equipment storage and maintenance areas. Similar to other airport support facilities, a majority of the infrastructure is aging and will require improvements as Airport activity grows and places additional demand on these facilities. These support facilities are highlighted with a pale orange color on **Figure 1-19**.

Aircraft Rescue and Fire Fighting Station

Sacramento County Airport Fire currently has 33 members providing ARFF, structural and wildland fire suppression, and emergency medical services (EMS). The ARFF station was originally constructed in 1967. The facility is about 10,000 square-feet and located north of the terminal buildings on Earhart Drive (Building #38 on **Figure 1-24**). The station includes equipment pursuant to FAA guidelines and regulations for ARFF Index C, and is staffed 24 hours a day.

In-flight Catering

LSG Sky Chefs provides in-flight catering services to the passenger airlines serving the Airport. It leases a 104,000-square-foot site with a 30,000-square-foot building in the area southwest of Terminal B, between the United Air Freight building and the air cargo facility.

Airport Administration Facilities

SCDA occupies approximately 40,000 square feet of office space on Level 02 of Terminal A for administrative facilities, as well as a large meeting room. SCDA executive offices are located on Level 04 of Terminal B, which occupy approximately 17,000 square feet.

The Operations Building was constructed in 1982 and provides approximately 10,000 square feet of space on two floors. The building was remodeled in early 2013, and again in 2018, and houses operations, badging and security functions, and the Sheriff's Department. The Physical Plant Maintenance Building is a 14,000-square-foot facility, constructed in 2008, and contains offices, shops, and storage. The Central Warehouse Building was constructed in 2009 and consists of warehouse space, support offices, and the Airport's Information Technology (IT) department.

Aircraft Fuel Storage

The Airport's fuel farm is located northeast of the ARFF station, on the east side of Earhart Drive. The fuel farm is supplied with a 12-inch diameter pipeline owned and operated by Wickland Oil Company and is connected to the Kinder Morgan pipeline in the City of West Sacramento.

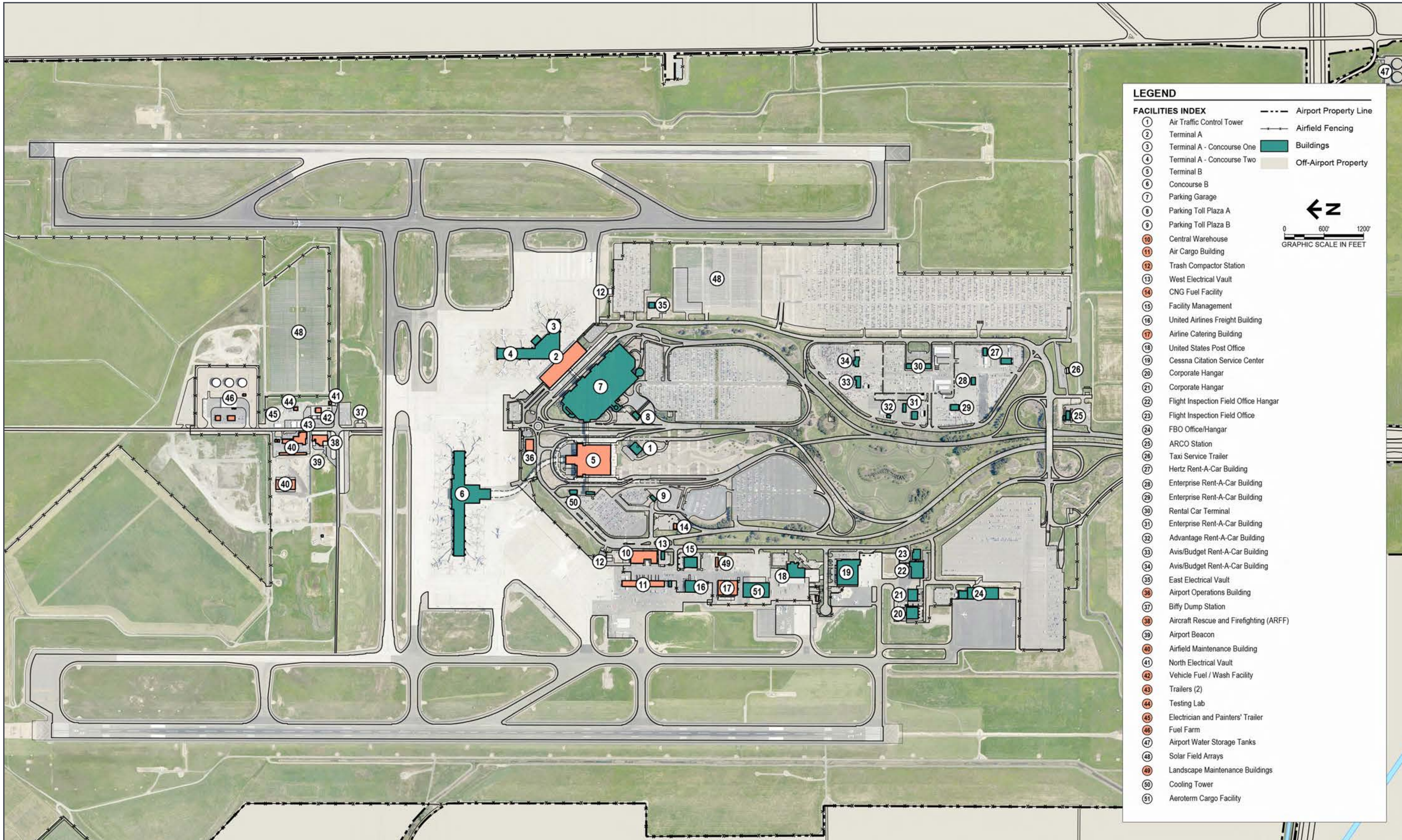
Airline Support Facilities

The passenger airlines lease space in the air cargo building and assign the space to their respective ground service and maintenance providers. Southwest Airlines leases approximately 13,500 square feet of the air cargo building, and 13,400 square feet of paved space in front of the building. Other airlines lease a total of 4,300 square feet of the air cargo building, and 5,300 square feet of pavement in front of the building.

Airport Equipment Storage and Maintenance Areas

Facilities for the storage of Airport maintenance equipment are located in the north airfield area adjacent to the ARFF station. There is 44,974 square feet of maintenance building space at SMF.

Figure 1-19 Airport Facilities



Source: Sacramento International Airport Master Plan, August 2019.

1-8 UTILITIES

Utilities at the Airport consist of water, storm drainage, sanitary sewer, jet fuel, electrical and communications, and natural gas systems. Water, storm drainage, sanitary sewer, and jet fuel systems are referred to as wet utilities (**Figure 1-20**). Electrical and communications and natural gas systems are referred to as dry utilities (**Figure 1-21**).

Water

The City of Sacramento provides water service to the Airport. The water for domestic use and fire protection demand is supplied by a water storage and pumping facility located at the intersection of Power Line Road and Bayou Way, on the south side of I-5. The water storage and pumping facility is supplied with water by an incoming 24-inch source, which in turn, supplies a 12-inch distribution loop located at the Airport.

Storm Drainage

The Airport's storm drainage system is a gravity flow system. Stormwater surface runoff is captured by a series of open channels and pipes, directed through water quality facilities, such as oil/water separators and sand filters, and then transported toward the southwest of the property to the Airport West Ditch.

Sanitary Sewer

The Sacramento Area Sewer District (SASD) provides wastewater collection services at the Airport. The sanitary sewer system is relatively shallow, and primarily a gravity flow system.

Jet Fuel

Multiple suppliers provide jet fuel to the Airport via a pipeline owned by Kinder Morgan Inc. The Airport fuel farm is located in the north airfield along the east side of Earhart Drive. Fuel is delivered to the Airport by a 12-inch underground fuel line that runs along Power Line Road.

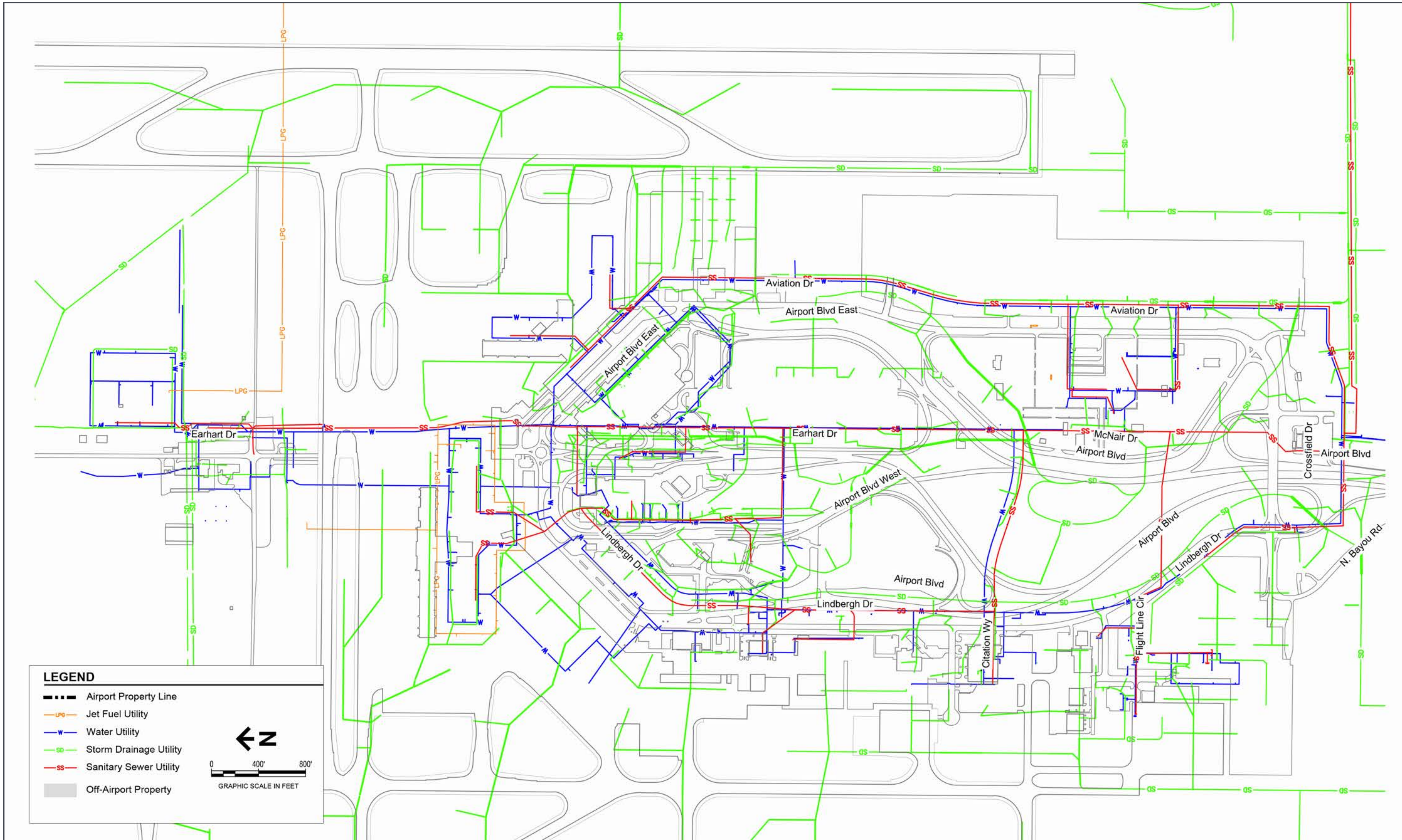
Electrical and Communications

The Sacramento Municipal Utility District (SMUD) provides electrical service to the Airport from two 69kv lines. The Airport also has a cogeneration plant that has a natural gas-powered generator, which uses the waste heat produced to generate cooling for buildings elsewhere on the Airport. The communications main follows the power distribution system. The communications network enhances Airport security, provides an effective interface between central control operators and passengers, and facilities

Natual Gas

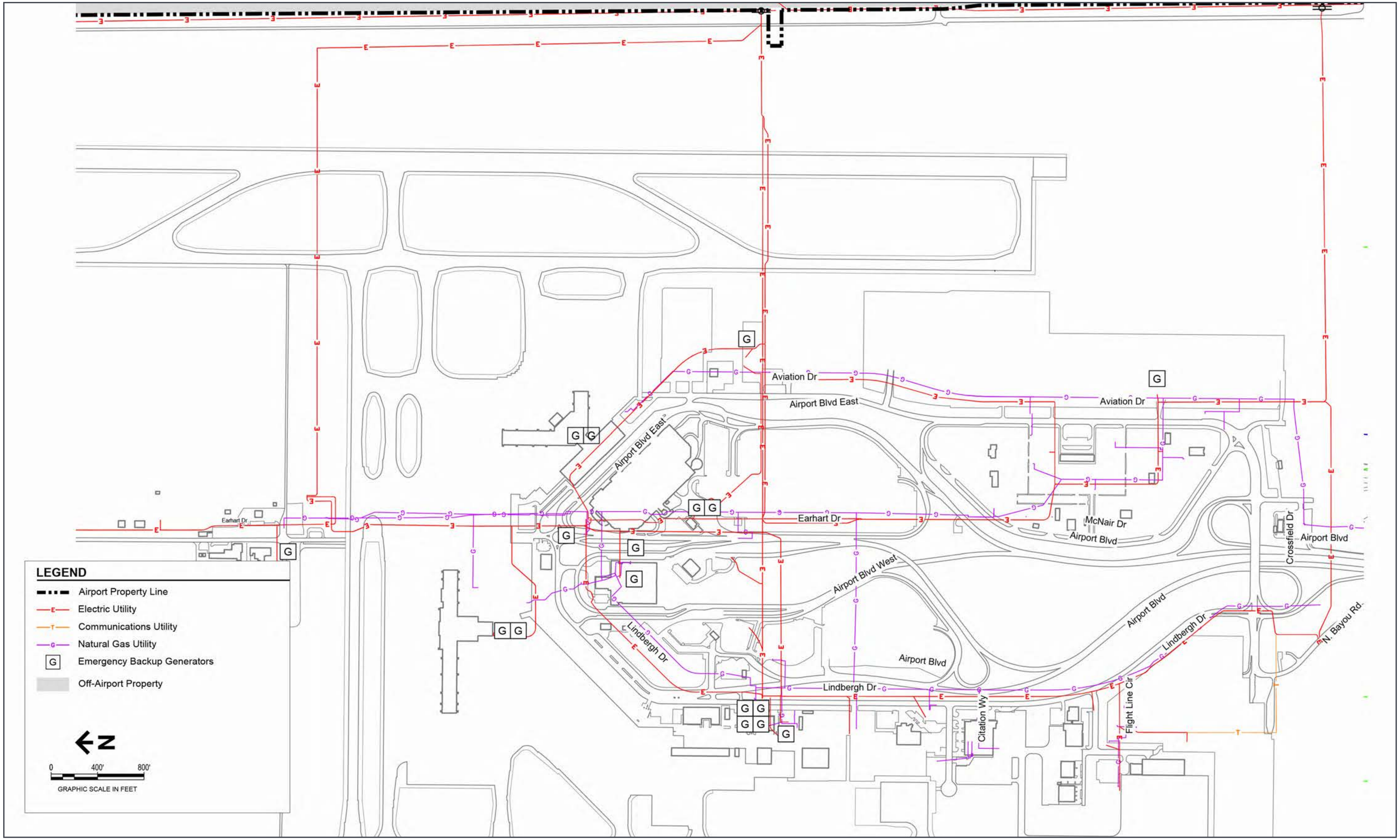
Pacific Gas and Electric Company provides natural gas service to the Airport. Three main underground pipelines transport gas throughout the Airport, all at under 60 pounds per square inch of pressure.

Figure 1-20 Wet Utilities



Source: Sacramento International Airport Master Plan, August 2019.

Figure 1-21 Dry Utilities



Source: Sacramento International Airport Master Plan, August 2019.

SACRAMENTO COUNTY

SACRAMENTO COUNTY

2

FORECAST SUMMARY

MASTER PLAN

July, 2020

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BOARD OF SUPERVISORS

Phil Serna, Chair

Sue Frost, Vice Chair

Patrick Kennedy

Susan Peters

Don Nottoli

SMF STAFF LEADERSHIP

Cynthia Nichol, Director

Sheri Thompson-Duarte, Deputy Director of Airport Operations and Maintenance

TJ Chen, Deputy Director of Planning and Development

Sylvia Ambrogio, Deputy Director of Finance and Administration

INTRODUCTION

Forecasts of aviation activity have been developed in support of the passenger and cargo demand for Sacramento International Airport. This includes forecasts for enplaned passengers, air cargo, and aircraft operations (air carrier, all-cargo, general aviation, and military operations). The forecasts are "unconstrained" and do not include specific assumptions about physical, regulatory, environmental, or other impediments to aviation activity growth at the Airport. Using Calendar Year (CY) 2018 as the base year, annual forecasts have been prepared for four future demand planning activity levels (PALs):

PAL 1 (2023) , PAL 2 (2028), PAL 3 (2033), and PAL 4 (2038).

The coronavirus pandemic, starting in early 2020, has created conditions for the start of another global recession. Recent economic projections prepared by the UCLA Anderson School of Management (UCLA Anderson Forecast) state that recovery to an employment level equivalent to the last months of 2019 will not occur until late 2022, for California and the entire nation. It is also anticipated that total passenger enplanements will drop by approximately 50% in 2020 and that it will take approximately 5 years for the Airport's passenger enplanements to reach their 2019 peak level.

It is expected that airport development projects will experience an approximate 5- to 10-year delay.

Historical Aviation Activity

A review of the Airport's recent historical aviation activity has a critical role in the development of a forecast. This forecast reviews historical aviation activity data from 1990 or more recent, depending on the analysis and the data that is available. It also identifies conditions of the Base Case Year (2018).

Factors Affecting Aviation Demand

The qualitative and quantitative factors that can influence future aviation activity at the Airport are discussed in this section. These factors are considered, either directly or indirectly, in developing the aviation activity forecasts for SMF.

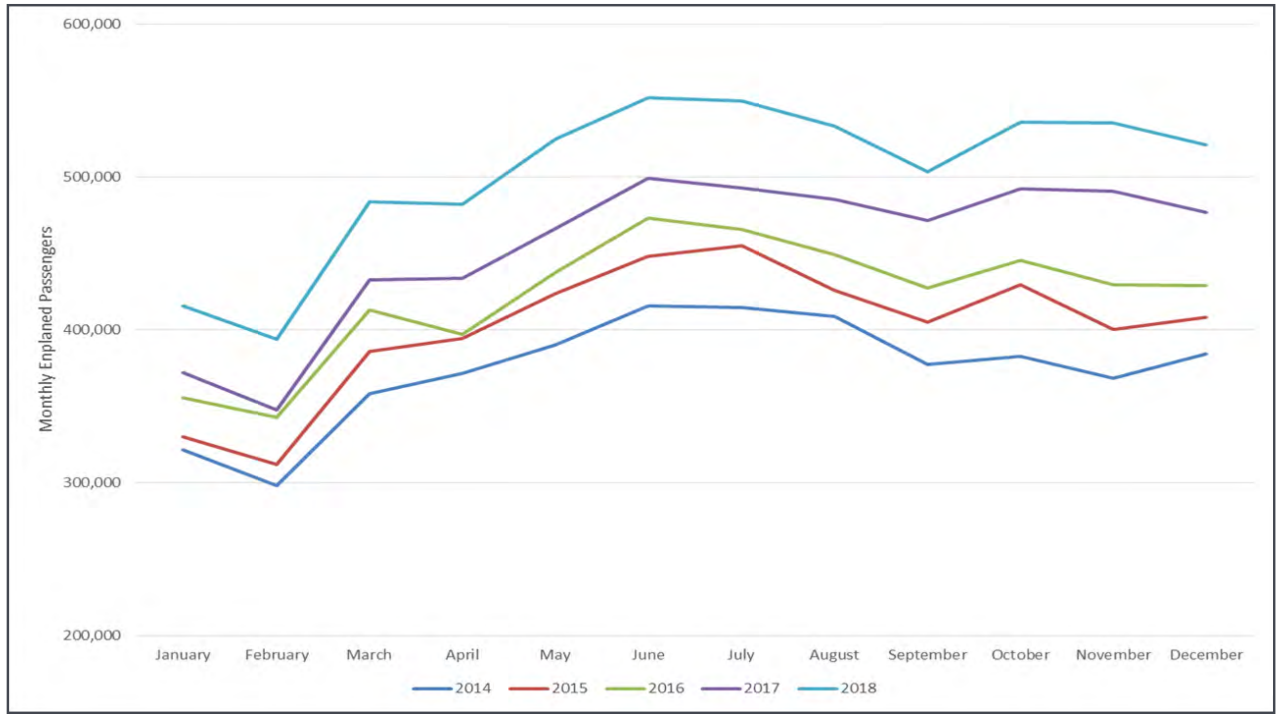
Aviation Demand Forecast

This section presents forecasts for enplaned passengers, air cargo, aircraft operations, and fleet mix at the Airport. A preferred Base Case Forecast is presented, as well as high growth and low growth scenarios.

2-1 HISTORICAL AVIATION ACTIVITY

A review of the Airport's recent historical aviation activity has a critical role in the development of a forecast. Most importantly it provides a means for comparing the projected growth of the forecast with what has happened in the past. This forecast reviews historical aviation activity data from 1990 or more recent, depending on the analysis and the data that is available. It also identifies conditions of the Base Case Year (2018). A review of enplanements by month over the past five years shows that June has been the most active month for enplanements in four of those years. **Figure 2-1** show a comparison of monthly enplanements by calendar year from 2014-2018.

Figure 2-1 Historical Enplanements by Month (2014 - 2018)



Source: Sacramento County Department of Airports, 2019.

Enplanements

An enplanement indicates a passenger boarding a commercial aircraft at an airport. SMF is primarily an origin & destination (O&D) airport, meaning that passengers generally begin and end their trip in Sacramento, rather than connect through Sacramento to a different destination.

Since 1990, annual enplanements at SMF have increased at a compounded annual growth rate (CAGR) of 4.4% for total enplanements. The Airport experienced a decrease in passenger activity beginning in 2008 lasting until 2013 due to the Great Recession. Since 2013, passenger activity at SMF has continuously increased, reaching previous peak level activity experienced in 2007 by 2017 (**Figure 2-2**).

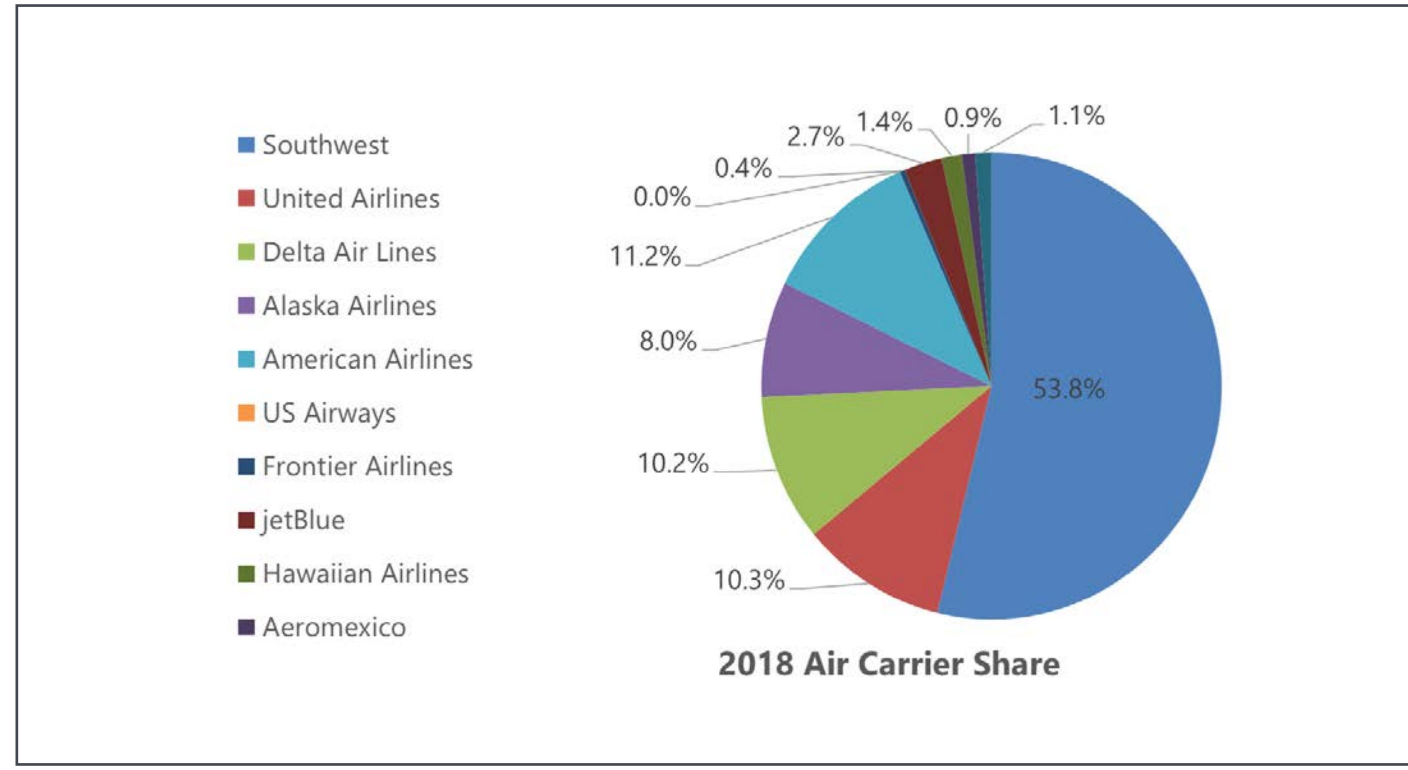
Air Service

Over the past several years most of the mainline carriers and their regional affiliates operating at SMF have been consistent in sustaining their share of enplanements. The most noticeable differences from 2012 to 2018 resulted from the merger between American Airlines and US Airways (now operating as American Airlines) and Frontier Airlines leaving SMF in 2013 and returning in late 2018.

The largest share of enplanements at the Airport in both 2012 and 2018 belonged to Southwest Airlines at 50.9% and 53.8%, respectively. The remaining larger domestic carriers (United, Delta, American/US Airways, and Alaska) make up a large portion of the remaining traffic at SMF, accounting for a combined share of 40.3% in 2012 and 39.7% in 2018 (**Figure 2-3**).

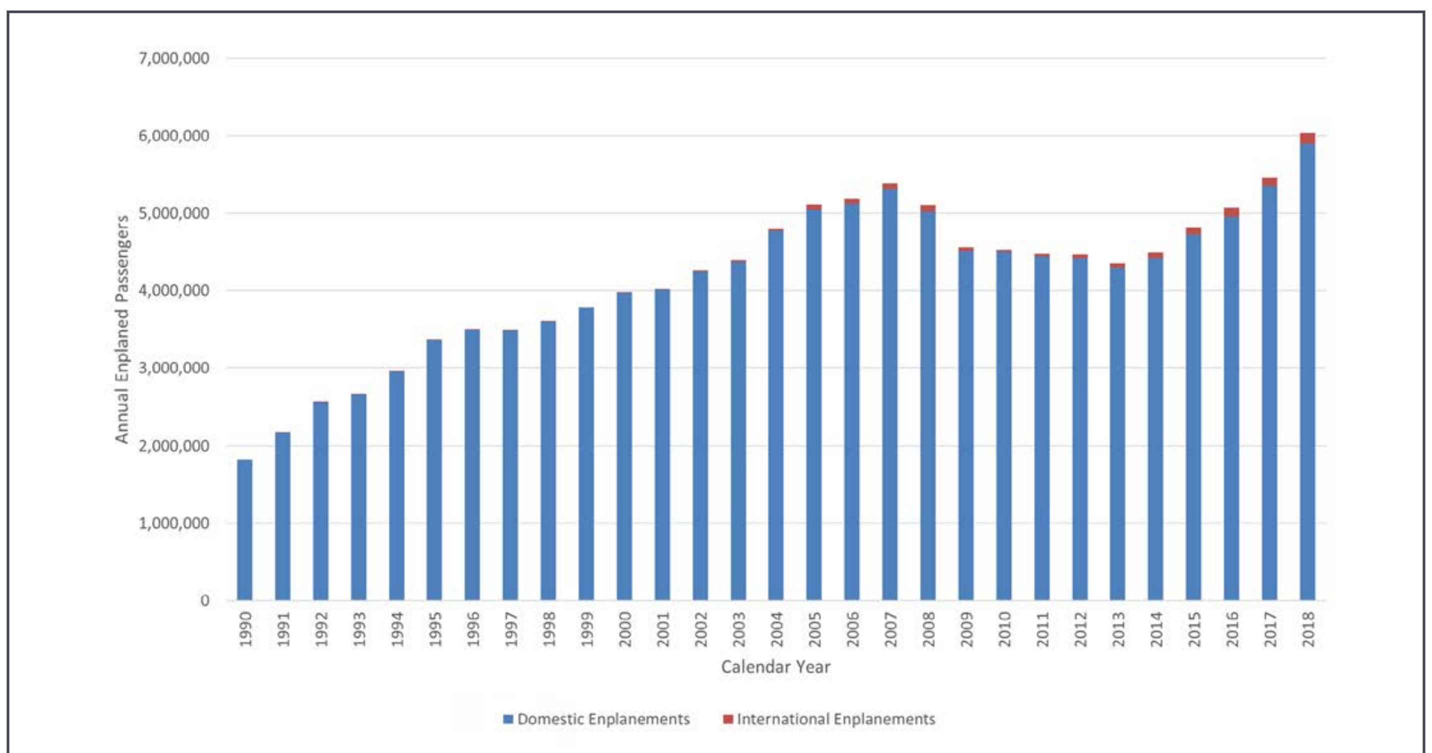
Figure 2-4 displays the domestic destinations served nonstop from SMF in 2018, inclusive of seasonal service. While four 2012 destinations have been dropped over the intervening six years (Arcata/Eureka, Detroit, Palm Springs, and Philadelphia), several long-distance markets have been added since the last passenger forecast was completed for SMF in 2012, which are shown in orange on the figure. SMF served five international destinations in 2018: Cabo San Lucas, Guadalajara, Guanajuato, Mexico City, and Vancouver.

Figure 2-3 Air Carrier Market Share (2018)



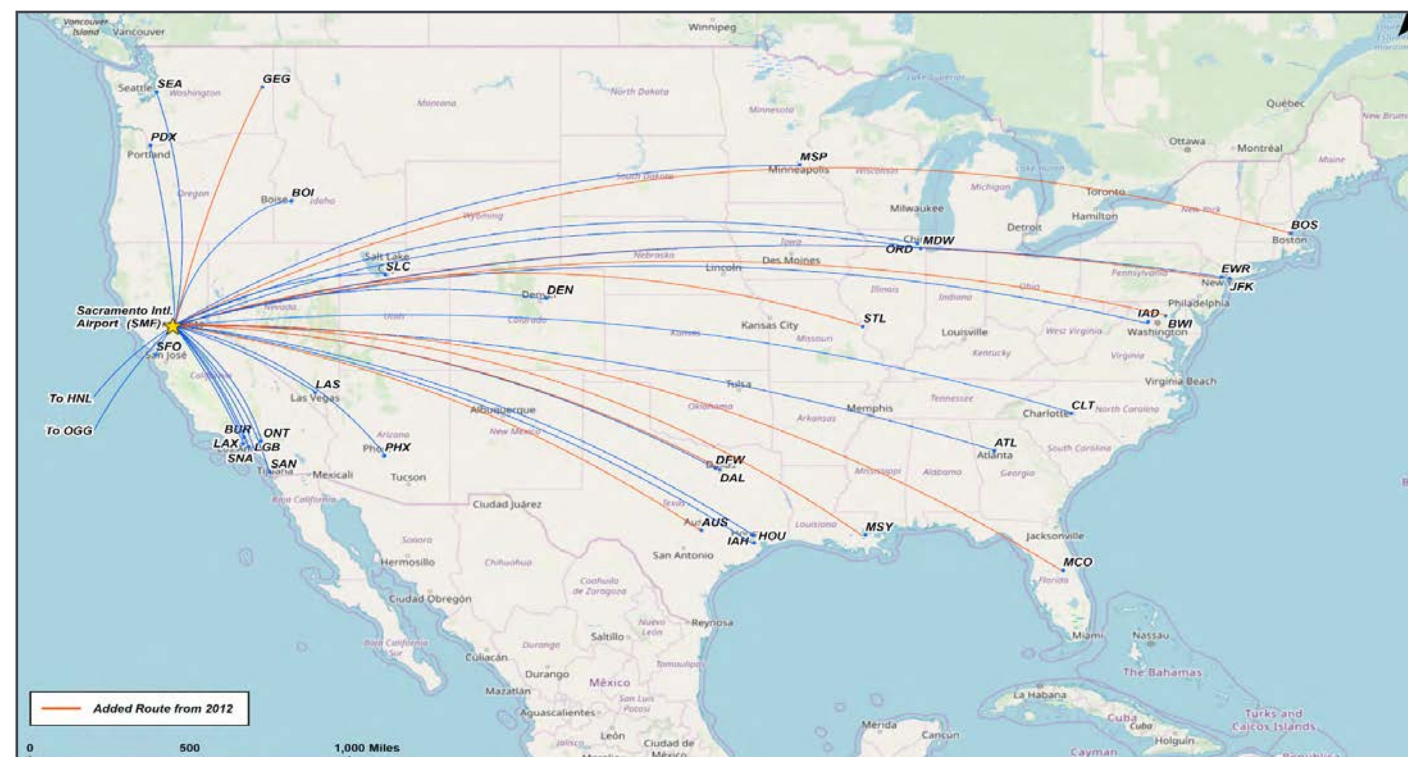
Source: Sacramento County Department of Airports, 2019.

Figure 2-2 Historical Domestic Enplanements (1990-2018)



Source: Sacramento County Department of Airports, 2019.

Figure 2-4 Non-Stop Domestic Destinations (2018)



Source: Sacramento County Department of Airports, 2019.

Air Cargo

Prior to 2017, SMF was primarily served by two all-cargo airlines: Federal Express (FedEx) and Westair Industries. Between 2011 and 2016 three other cargo operators (Airborne Express, Ameriflights, and UPS) operated out of SMF on a limited basis. In the Sacramento region, UPS operates primarily at Mather Airport.

Starting in October 2017, contracted cargo operators working with Amazon began service into SMF on a sustained basis, growing from 7,000 tons of total cargo freight in the last quarter of 2017, to nearly 51,000 tons in calendar year 2018. The addition of Amazon cargo at SMF increased total cargo tonnage at the Airport by 73% between 2016 and 2018.

Prior to 2018, total air cargo at SMF reached a peak in 2007. After the effects of the recession in 2008, air cargo remained relatively stable, between 63,800 and 68,600 metric tons from 2010 until 2016 (**Figure 2-5**).

Aircraft Operations

Aircraft operations, defined as either a takeoff or a landing by an aircraft are typically stratified into three categories: commercial, general aviation, and military operations.

While total commercial operations have fluctuated and have increased 10% from 108,000 in 2000 to 118,900 in 2018, the growth in commercial operations has been entirely in the air carrier category as air taxi/commuter operations have decreased nearly 45% over the same time period. In addition, passenger enplanements have increased by 52% over the same time period.

General Aviation (GA) operations since 2003 have decreased 74% from 34,700 to 8,900. Military operations at SMF have averaged approximately 3,100 annual operations between 2003 and 2018. In 2018, military operations totaled 2,215. **Figure 2-6** presents the summary of aircraft operations at SMF, by category, between 2003 and 2018.

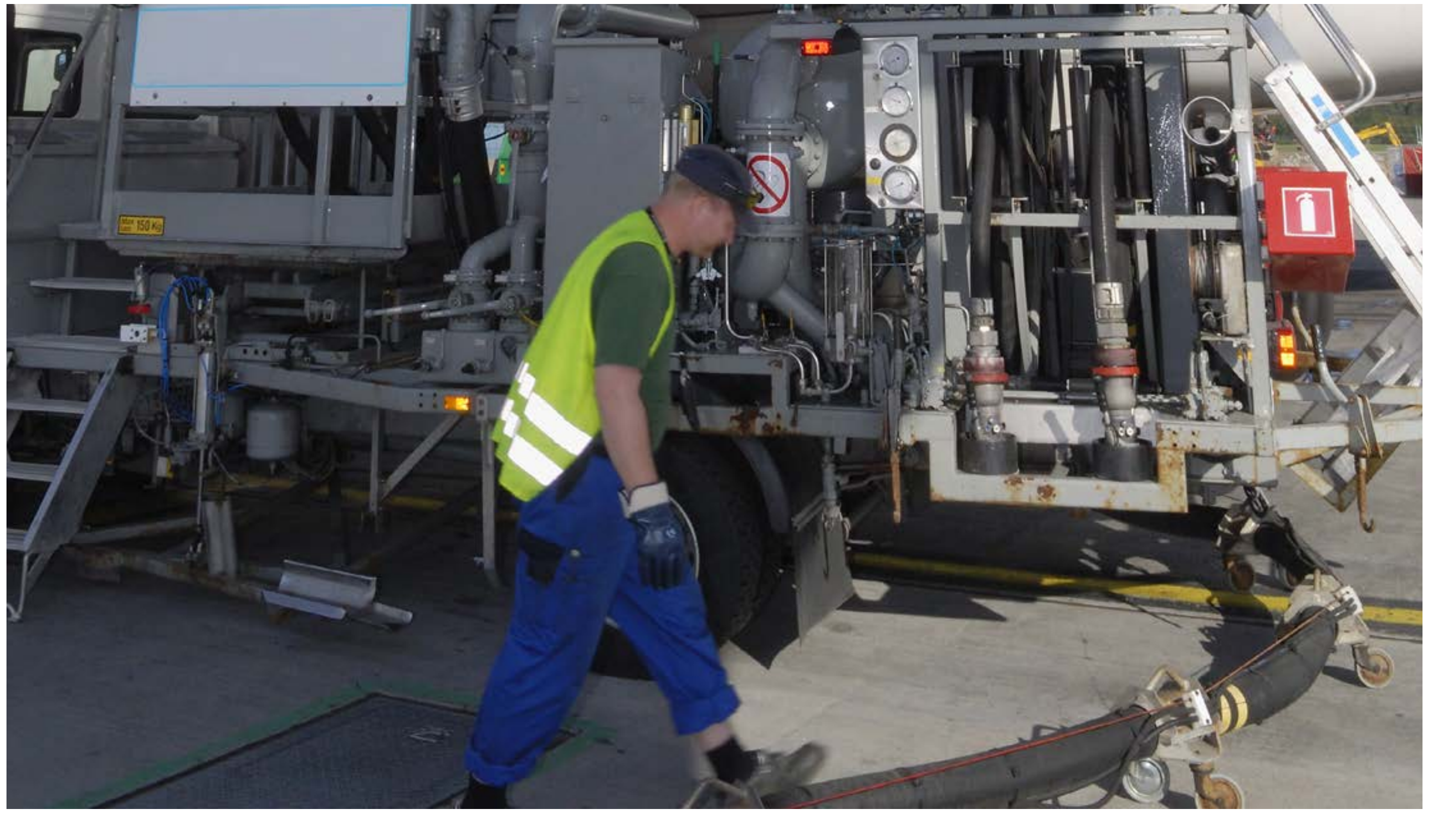
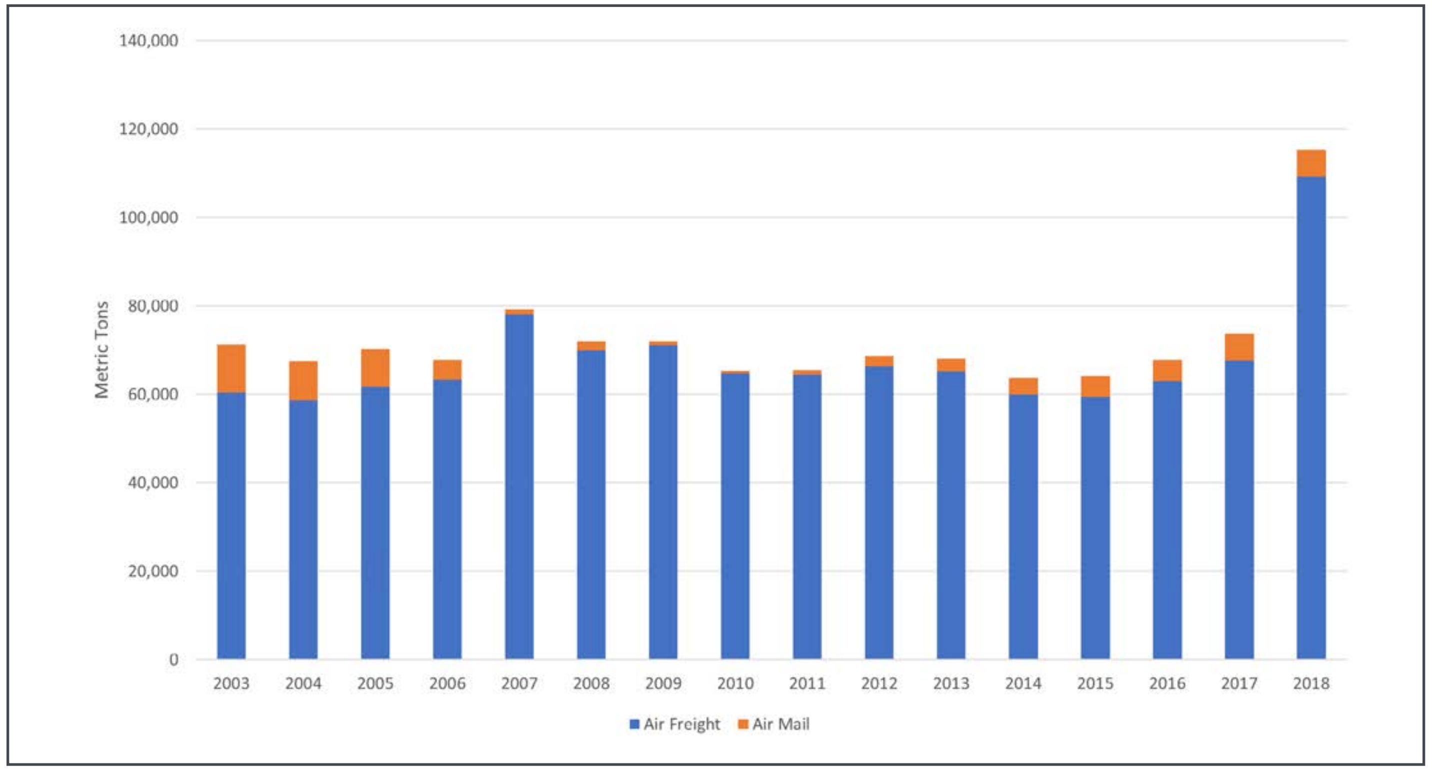
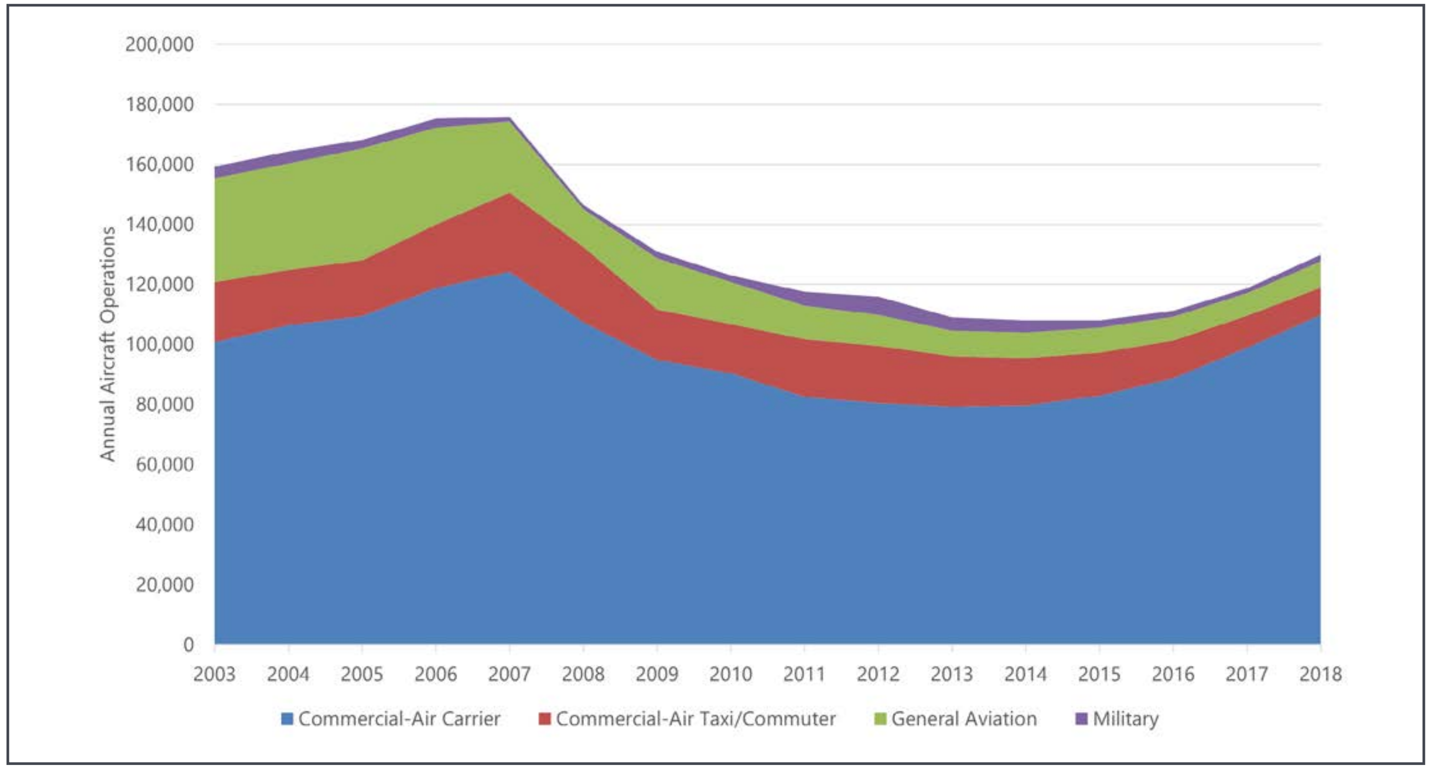


Figure 2-5 SMF Historic Air Cargo (2003-2018)



Source: Sacramento County Department of Airports.

Figure 2-6 Historic Aircraft Operations by Category (2003-2018)



Source: FAA OPSNET, 2019.

2-2 FACTORS AFFECTING AVIATION DEMAND

The qualitative and quantitative factors that can influence future aviation activity at the Airport are discussed in this section. These factors are considered, either directly or indirectly, in developing the aviation activity forecasts for SMF. **Table 2-1** summarizes the values of the projected socioeconomic variables for the forecast horizon years out to 2038.

Table 2-1 Forecast - Key Socioeconomic Variables (2018-2038)

	2018	2023	2028	2033	2038
Sacramento Region					
Total Population	2,620,519	2,762,504	2,909,356	3,055,675	3,194,217
Total Employment	1,498,730	1,619,093	1,743,588	1,866,309	1,978,885
Personal Income Per Capita	$46,996	$49,940	$52,749	$55,011	$56,927
Gross Regional Product (millions)	$124,575	$136,802	$149,677	$162,725	$175,217
State of California					
Total Population	40,020,786	42,083,206	44,209,830	46,318,410	48,299,773
Total Employment	24,479,790	26,414,198	28,350,837	30,219,539	31,907,896
Personal Income Per Capita	$52,550	$55,660	$58,542	$60,872	$62,882
Gross Regional Product (millions)	$2,493,298	$2,737,861	$2,990,595	$3,246,069	$3,493,551
United States					
Total Population	328,910,940	344,505,124	360,689,467	376,816,133	392,026,522
Total Employment	202,637,900	217,444,775	232,064,789	246,223,311	259,305,819
Personal Income Per Capita	$54,095	$57,597	$60,873	$63,568	$65,984
Gross Domestic Product (millions)	$20,656,977	$22,632,504	$24,671,615	$26,753,810	$28,819,660

Source: Woods & Poole, Inc., 2019

Airport Service Area

Establishing an accurate airport service area is a critical first step to a forecast, as it provides the extent to which commercial passengers can be anticipated to originate from. Understanding this area provides the necessary foundation for determining what socioeconomic data should be used in forecast models, so that the projections are accurately defined by the characteristics of the people served.

The 2013 Aviation Demand Forecast and catchment area study produced an in-depth and thorough analysis of what it considered the SMF Service Area, by developing primary and secondary service areas related to catchment areas that were built off a drive-time analyses, population densities, access costs, passenger preferences, and airfares of SMF and four other commercial airports: San Francisco International Airport (SFO), Oakland International Airport (OAK), Mineta San Jose International Airport (SJC), and Reno-Tahoe International Airport (RNO). The results of the analysis identified Primary and Secondary Service Areas for SMF, outlined below and shown on **Figure 2-7**.

The Primary Service Area of SMF includes the counties of:

- El Dorado
- Sutter
- Placer
- Yolo
- Sacramento
- Yuba
- San Juaquin

The Secondary Service Area of SMF includes the counties of:

- Amador
- Nevada
- Butte
- Shasta
- Calaveras
- Solano
- Colusa
- Stanislaus
- Glenn
- Tehama
- Napa

Key Socioeconomic Indicators and Trends

The Sacramento-Roseville Combined Statistical Area (CSA) (or the Sacramento Region) was selected as an appropriate source of historical and projected socioeconomic data for the region and the Airport. The 2018 Sacramento-Roseville CSA , which includes the California counties of El Dorado, Nevada, Placer, Sacramento, Sutter, Yolo, and Yuba, closely resembles the Airport's Primary Service Area .

The economy of the Sacramento Region plays a vital role and has a direct impact on long-term passenger and cargo demand at SMF. In general, there is a correlation among areas with greater populations, employment, Personal Income Per Capita (PIPC), and Gross Regional Product (GRP) and a strong aviation service demand. Specifically, these key socioeconomic indicators or drivers tend to have an influence on O&D enplanements and their future projections.

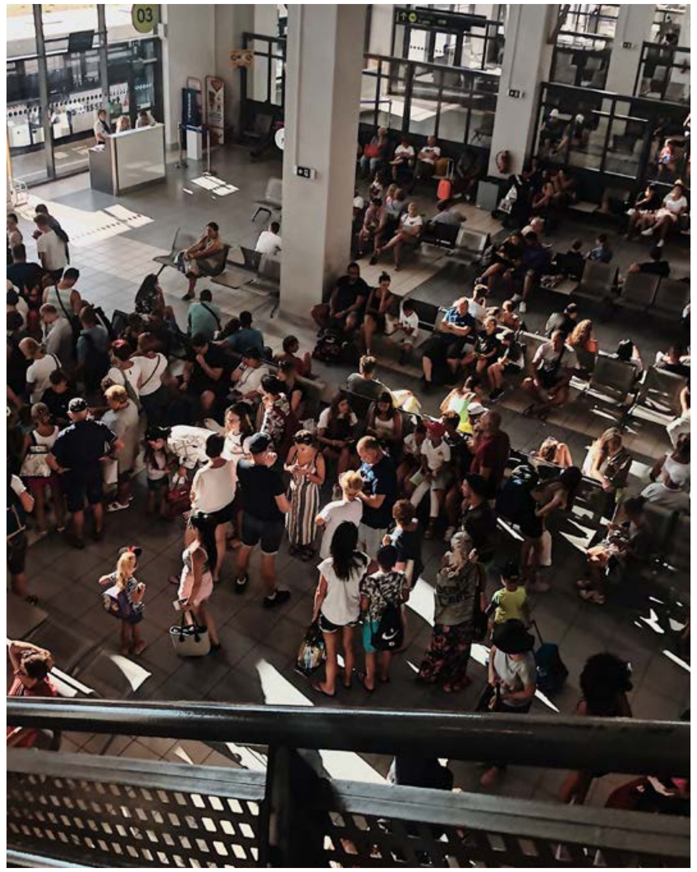
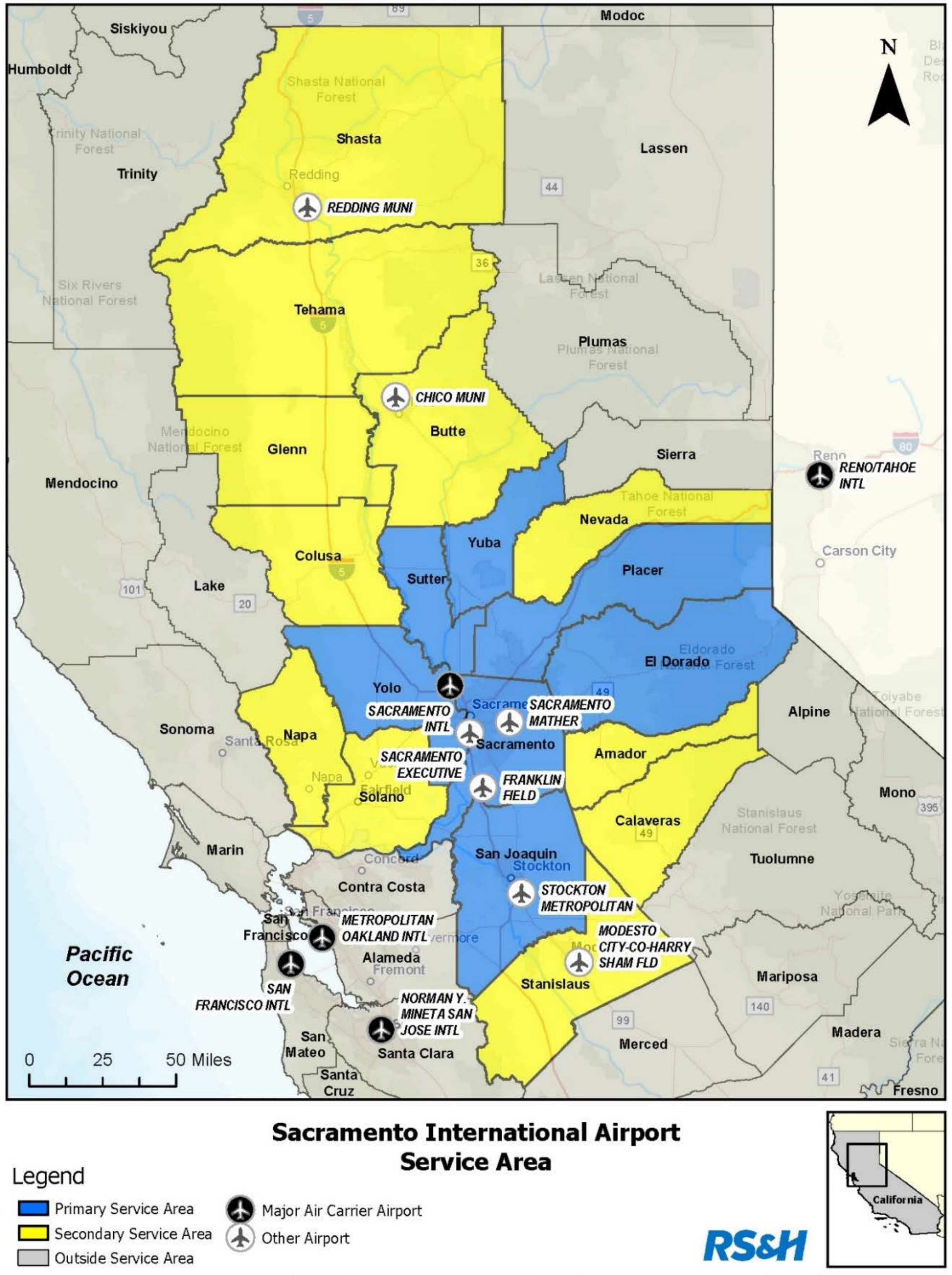


Figure 2-7 SMF Service Area Map



Source: SMF Aviation Demand Forecast, 2013; RS&H, 2019

Historical Analysis

The results of the historical socioeconomic analysis showed that from 1990 to 2018 the key variables for the Sacramento Region all increased at rates higher than the state of California and the U.S., except for PIPC in which the Average Annual Growth Rates (AAGR) of the Sacramento Region and the U.S. were the same at 1.7%, and the state of California was slightly higher at 1.8%.

Figure 2-8 shows a comparison of the AAGR for the key socioeconomic variables from 1990-2018.

Forecast Analysis

While still showing AAGRs that increase over the next 20 years, the socioeconomic forecast analysis for 2019-2038 projects slower growth in each key variable compared to the rates of growth in the historical analysis.

The forecast for the Sacramento Region's population growth, while slight, has a greater AAGR (1.0%), than the state of California and the U.S. (0.9%). Similarly, the forecast for employment of the Sacramento Region (1.4%) AAGR is slightly greater than the state of California (1.3%) AAGR, and U.S. (1.2%) AAGR. The forecast of PIPC for the Sacramento Region and the U.S is identical at 1.0% AAGR, compared to the state of California which is slightly less at 0.9% AAGR. The forecast for GRP projects identical growth rates for the Sacramento Region, state of California, and U.S. at (1.7% AAGR).

Figure 2-9 shows a comparison of the AAGR for the key socioeconomic variables projected for 2019-2038.

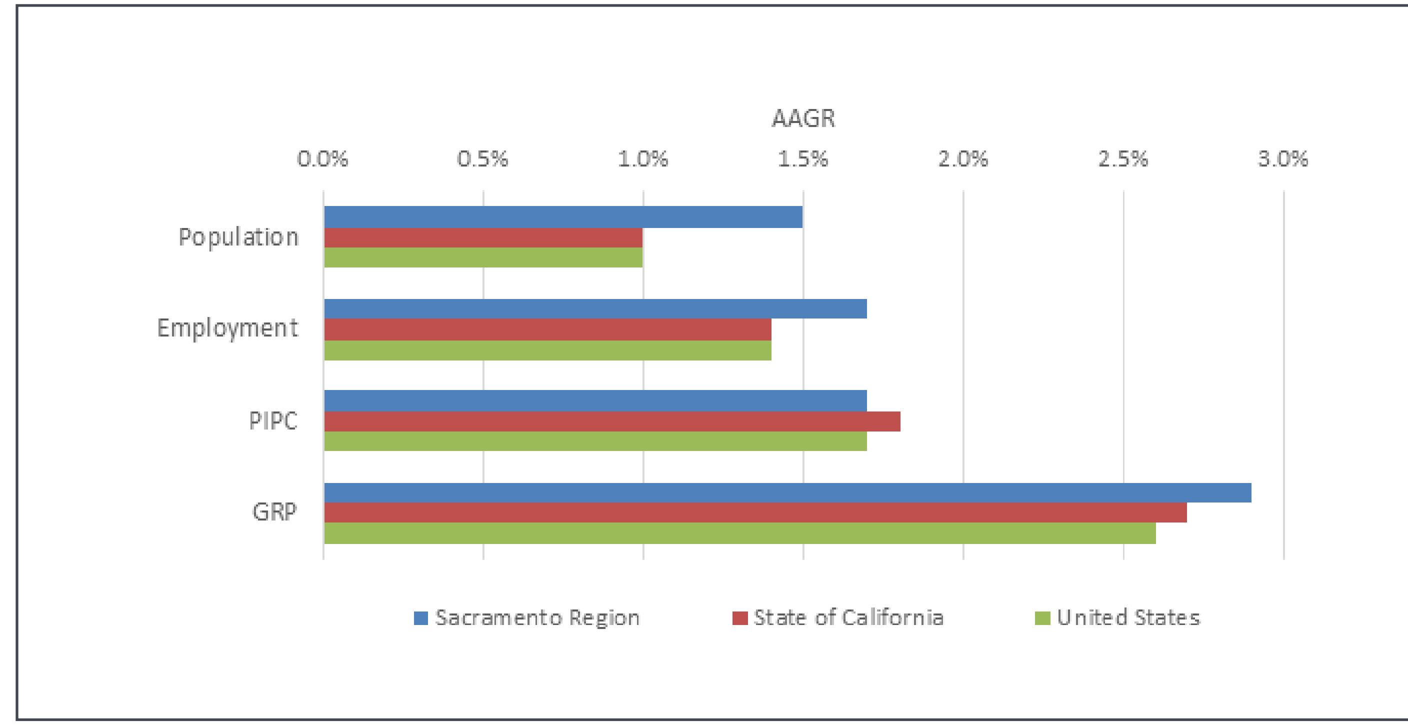
E-Commerce Trends

Cargo operations and freight tonnage have increased significantly at SMF with the introduction of contracted cargo operators working with e-commerce companies such as Amazon on a sustained basis. Amazon's activity at the Airport is supported by the Fulfillment Center located along Power Line Road immediately east of the Airport. Since starting operations in the last quarter of 2017, cargo tonnage associated with Amazon operations is responsible for 54% of the cargo growth at SMF in 2017, and 99.8% of all cargo tonnage growth in 2018.

Since 2015, commercial service airports have experienced strong air cargo tonnage growth due to e-commerce operators. Airports that have been selected as network operations for contracted cargo operators working with Amazon are experiencing even higher growth rates. The Amazon national hub at Cincinnati/Northern Kentucky (CVG) is rapidly expanding, with its air cargo facilities anticipated for completion in 2020. Beyond CVG, Amazon and its contracted cargo operators have established operations at 26 other airports nationwide since 2016. SMF along with Stockton Metropolitan Airport are the only Amazon destinations in the Central/Northern California and Nevada region. The next closest destinations are Ontario International and March Air Reserve Base near the City of Riverside to the south of Sacramento (390 and 410 miles, respectively), Portland International to the north (480 miles), and Denver International to the east (910 miles).

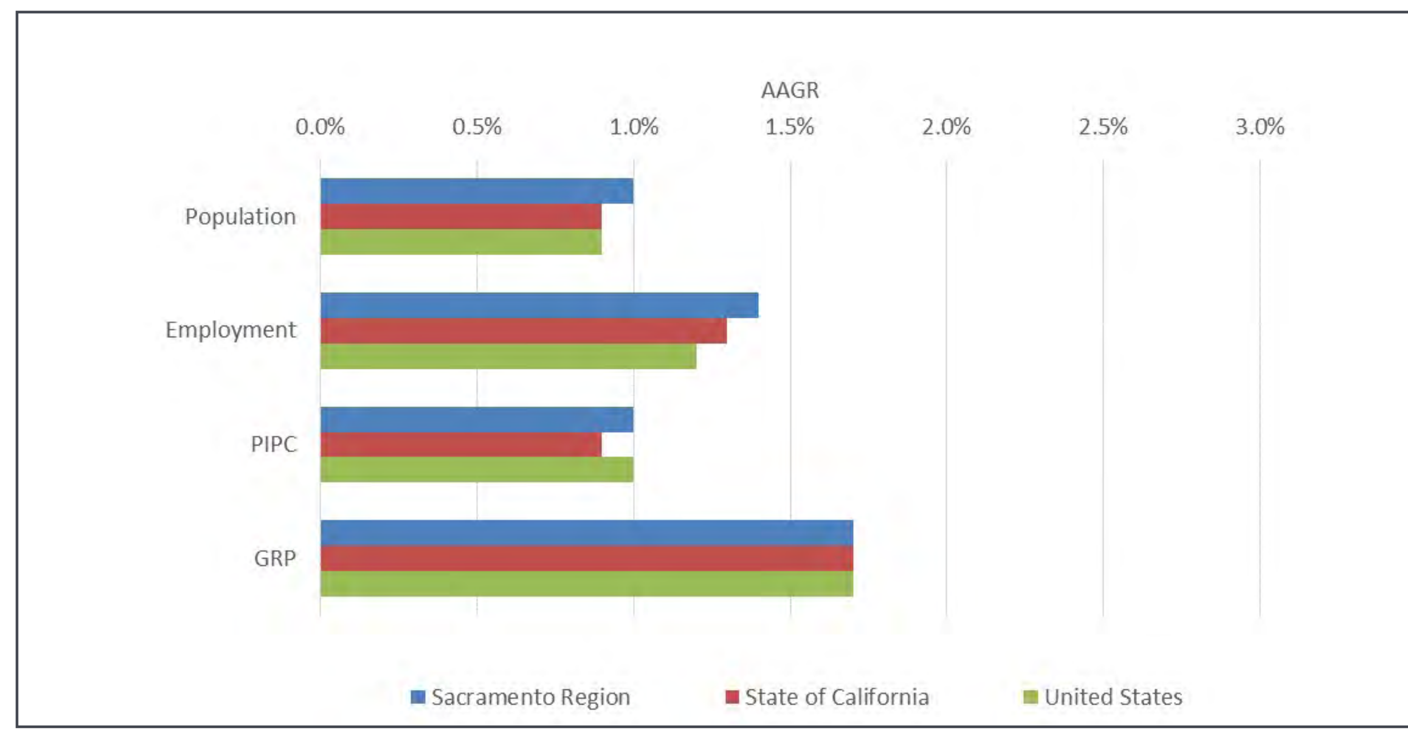
If air cargo expansion continues to grow for Amazon, so will its available fleet of aircraft. News stories in 2019 outlined the planned expansion from 50 aircraft (a mix of Boeing 737 and 767 freighters) to 70 aircraft beginning in 2020. Given this reported expansion in both fleet capabilities and airport cargo facilities, it is reasonable to estimate that cargo growth due to Amazon and other e-commerce businesses will continue to be strong over the next several years. As Amazon and its contracted cargo operation begins to mature in its services and capabilities, growth may subside to more typical levels experienced in the industry prior to this latest boom.

Figure 2-8 Historical Growth Rates of Socioeconomic Predictors (1990-2018)



Source: Woods & Poole, Inc., 2018; RS&H Analysis, 2018

Figure 2-9 Forecast - Growth Rates of Socioeconomic Predictors (2019-2038)



Source: Woods & Poole, Inc., 2018; RS&H Analysis, 2018

2-3 AVIATION DEMAND FORECAST

This section presents forecasts for enplaned passengers, air cargo, aircraft operations, and fleet mix at the Airport. A preferred Base Case Forecast is presented, as well as high growth and low growth scenarios.

Enplanements Forecast

The enplaned passenger forecast was developed using three different methodologies (historical trend analysis, linear regression analysis, and market share analysis). Of the domestic passenger enplanement forecast options, the Sacramento Region Airports market share model was selected for the base case enplanements forecast, showing a CAGR of 2.6% in total enplanements over the forecast period **(Table 2-2)**. The market share analysis takes into account the growth of the region as a whole, instead of benchmarking to the national trend.

International enplanements are anticipated to grow to approximately 318,200 enplanements in 2038 with an AAGR of 4.5%. **Figure 2-11** shows the selected international passenger enplanements forecast through the 2038 horizon period AAGR of 4.5%.

The Base Case enplanement forecast was supplemented by two sensitivity forecasts for advance planning purposes only, to represent a range of potential passenger activity at SMF through the planning horizon. The high growth forecast

Table 2-2 Base Case Enplanement Forecast Summary

Year	Domestic Enplanements	International Enplanements	Total Enplanements
2018	5,898,684	132,946	6,031,630
2023	7,082,000	176,700	7,355,300
2028	7,826,000	225,200	8,196,600
2033	8,782,000	273,400	9,148,500
2038	9,864,000	318,200	10,166,400
CAGR			
2018-2023	4.0%	5.9%	4.0%
2023-2028	2.1%	5.0%	2.2%
2028-2033	2.1%	4.0%	2.2%
2018-2038	2.6%	4.5%	2.6%

Source: RS&H, 2019.

was developed assuming an increasing market share of the Sacramento region airports for domestic enplanements while keeping the international enplanement forecast the same as the Base Case. The low growth forecast was developed assuming a 1.5% annual growth rate for domestic enplanements from 2019 through 2038 (using the 2019 projected domestic enplanements from the Base Case forecast), while the international enplanements were assumed to grow at half the rate as the Base Case.

Figure 2-10 summarizes the passenger enplanement forecasts for the Base Case, Low Growth, and High Growth scenarios, also compared to the FAA Terminal Area Forecast (TAF). **Figure 2-11** shows the selected international passenger enplanements forecast through the 2038 horizon period.

Air Cargo Forecast

The air cargo forecast utilized a multiple regression analysis in which cargo tonnage is derived using predictor variables that have a statistical correlation with its growth.

The base case cargo tonnage forecast was supplemented by two sensitivity forecasts to be used by the SCDA for advance planning purposes only, to represent a range of potential cargo activity at SMF through the planning horizon. The high growth forecast was developed assuming a CAGR of 7.0% over the first five years, 5.5% from 2023 to 2028, and 4.0% for the final ten years of the planning period. The low growth forecast was developed assuming a 1.5% CAGR for cargo tonnage through 2038, representing the typical growth rate at SMF before the arrival of contracted cargo operators working with Amazon in 2017.

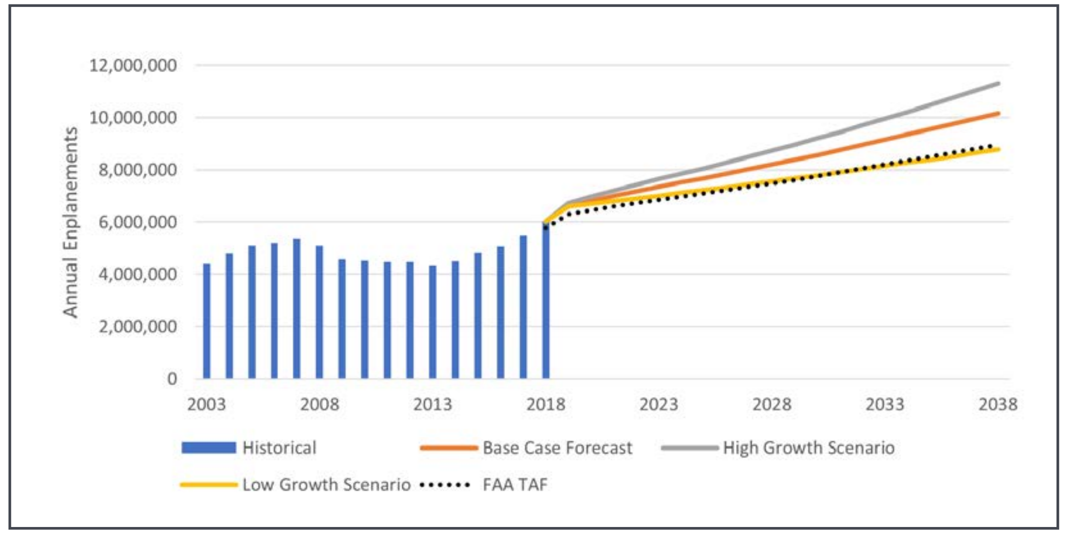
Table 2-3 and **Figure 2-12** summarize the cargo forecasts for the Base Case, Low Growth, and High Growth scenarios.

Fleet Mix

The most demanding aircraft expected to use the Airport within the planning period are the MD-11 and DC-10 operated by FedEx. FedEx does not plan to retire these aircraft anytime soon and is expected to continue serving the Airport using the MD-11 and DC-10 through the planning period. Based on the Traffic Flow Management System Count (TFMSC) data, the McDonnell Douglas MD-11F, operated by FedEx, conducted 745 operations in 2018. These FedEx operations include some operations by DC-10 aircraft (both aircraft are airplane design group IV).

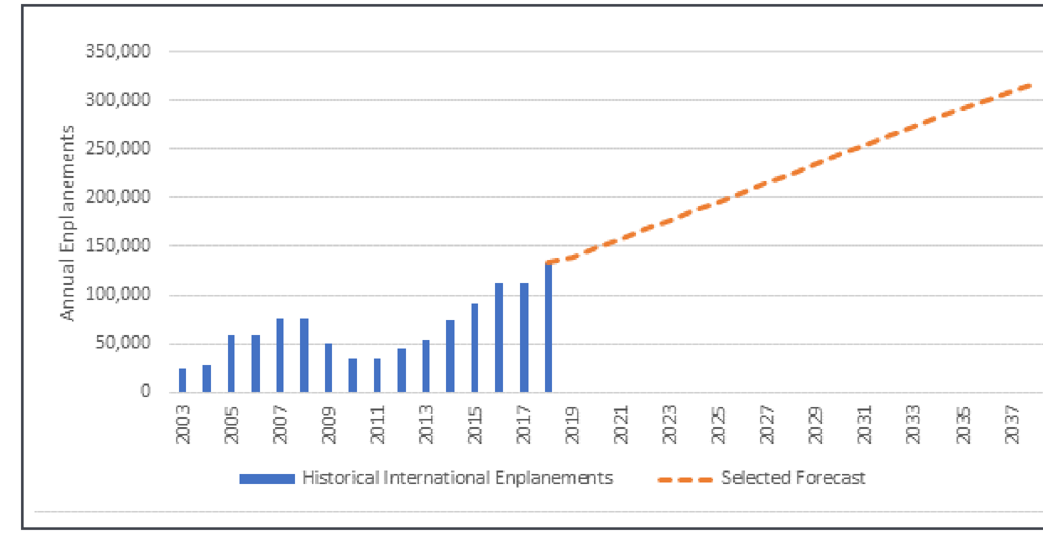
An airport operations forecast fleet mix was developed for the SMF Runway 16R/34L Pavement Rehabilitation project, completed in 2018. The forecast fleet mix for the years of 2027 and 2035 were used for the runway rehabilitation project. The description of aircraft types and percentage break-down by type of aircraft is shown in **Table 2-4** and **Table 2-5**.

Figure 2-10 Passenger Enplanements Forecast Comparison



Source: RS&H analysis, 2019; FAA TAF, 2018.

Figure 2-11 Selected International Enplanements Forecast



Source: RS&H analysis, 2020; FAA TAF, 2018.

Table 2-3 Air Cargo Forecast Summary

Year	Base Case Forecast	High Growth Scenario	Low Growth Scenario
2018	109,197	109,197	109,197
2023	144,853	153,155	117,636
2028	187,553	200,167	126,728
2033	229,761	243,534	136,522
2038	268,641	296,296	147,073
CAGR			
2018-2023	5.8%	7.0%	1.5%
2023-2028	5.3%	5.5%	1.5%
2028-2033	4.1%	4.0%	1.5%
2018-2038	4.6%	5.1%	1.5%

Notes: Values shown in metric tons.
Source: RS&H, 2020.

Table 2-4 Aircraft Category Descriptions

Aircraft class (a)	Description
A	Small single-engine propeller aircraft weighing 41,000 pounds or less (e.g., P28A, C208)
B	Twin-engine aircraft weighing 41,000 pounds or less (e.g., PA31, C550, C560, E120, BE20, BE9L)
C	Large jet aircraft weighing more than 41,000 pounds, but no more than 255,000 pounds (e.g., B737, DH8A, C135)
D	Heavy jet aircraft weighing 255,000 pounds or greater (e.g., A380, B777, B767, and B757)

Source: Sacramento County Department of Airports, 2019.

Table 2-5 Fleet Mix Distribution

FAA Aircraft Class	Fleet Mix Distribution	
	Baseline (2016)	Forecast (2035)
A	7%	6%
B	7%	6%
C	83%	85%
D	3%	3%
TOTAL	**100%**	**100%**

Source: Sacramento County Department of Airports, 2019.

Aircraft Operations

The forecast of annual aircraft operations was derived from the passenger enplanement forecast and cargo tonnage activity, and an evaluation of air taxi, general aviation, and military operations. Each sector was developed as follows:

- Passenger airline operations (both regional and mainline) are based on the enplaned passenger forecast and assumptions regarding average seats per departing aircraft and enplaned passenger load factor.
- Cargo airline operations are based on the air cargo forecast and assumptions regarding average cargo tonnage per operation and the split between cargo on cargo airlines versus passenger airlines.
- Air taxi and charter operations, and military operations are based on data for the base year (2018) of the forecast and carried forward through the 2038 horizon year. While these operations can vary in any given year, the numbers for each category have been relatively stable over the past 4 to 6 years. Military operations have stabilized after a period of decline since 2012.
- General aviation operations are forecast to increase at an average rate of 0.3% per year from 2018 to 2038. This increase is based on the national growth in overall general aviation operations included in the FAA Aerospace Forecast.

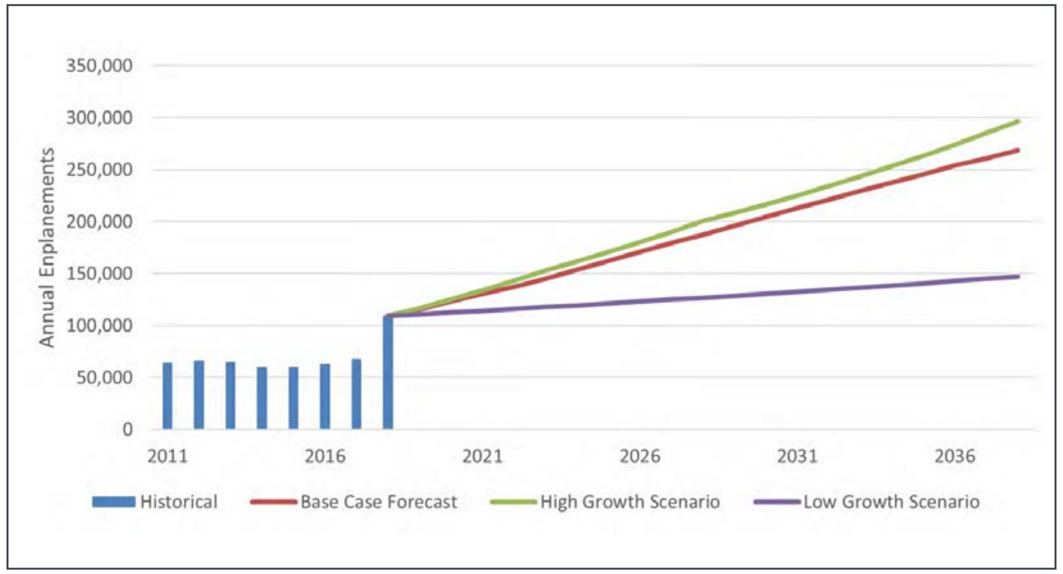
The high growth and low growth operations forecasts were developed based on the same assumptions, but utilizing the scenario forecasts for passenger enplanements and cargo tonnage (**Table 2-6** and **Figure 2-13**).

Table 2-6 Aircraft Operations Forecast Summary

Scenario	Base Year 2018	Forecast Years 2023	2028	2033	2038	AAGR 2018-2038
Base Case Forecast						
Air Carrier		129,333	142,002	156,190	171,087	2.0%
Cargo	118,863	10,685	13,494	16,123	18,387	4.0%
Air Taxi/Charter		2,500	2,500	2,500	2,500	0.0%
General Aviation	8,881	9,015	9,151	9,289	9,429	0.3%
Military	2,215	2,300	2,300	2,300	2,300	0.2%
Total Operations	**129,959**	**153,833**	**169,447**	**186,402**	**203,703**	**2.3%**
Low Growth Scenario						
Air Carrier		123,248	131,001	139,190	147,843	1.2%
Cargo	118,863	8,677	9,118	9,580	10,066	1.0%
Air Taxi/Charter		2,500	2,500	2,500	2,500	0.0%
General Aviation	8,881	9,015	9,151	9,289	9,429	0.3%
Military	2,215	2,300	2,300	2,300	2,300	0.2%
Total Operations	**129,959**	**145,740**	**154,070**	**162,859**	**172,138**	**1.4%**
High Growth Scenario						
Air Carrier		134,409	151,106	170,078	190,544	2.5%
Cargo	118,863	11,297	14,401	17,090	20,280	4.5%
Air Taxi/Charter		2,500	2,500	2,500	2,500	0.0%
General Aviation	8,881	9,015	9,151	9,289	9,429	0.3%
Military	2,215	2,300	2,300	2,300	2,300	0.2%
Total Operations	**129,959**	**159,521**	**179,458**	**201,258**	**225,054**	**2.8%**

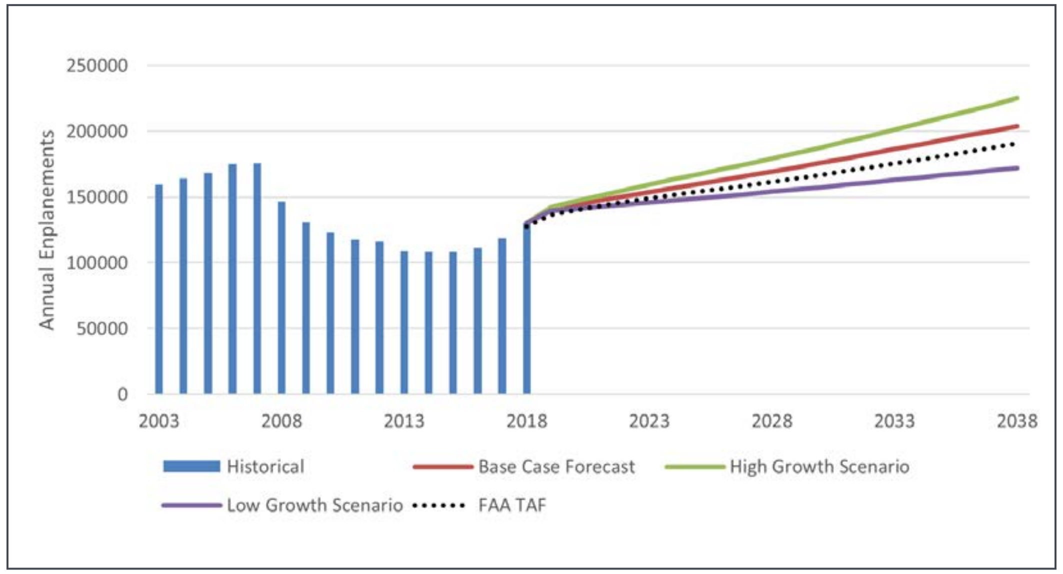
Source: RS&H analysis, 2020.

Figure 2-12 Air Cargo Forecast Comparison



Source: RS&H analysis, 2020; FAA TAF, 2018.

Figure 2-13 Aircraft Operations Forecast Comparison



Source: RS&H analysis, 2020; FAA TAF, 2018.

Sacramento
County

3

FACILITY REQUIREMENTS SUMMARY

MASTER PLAN

July, 2020

SACRAMENTO COUNTY

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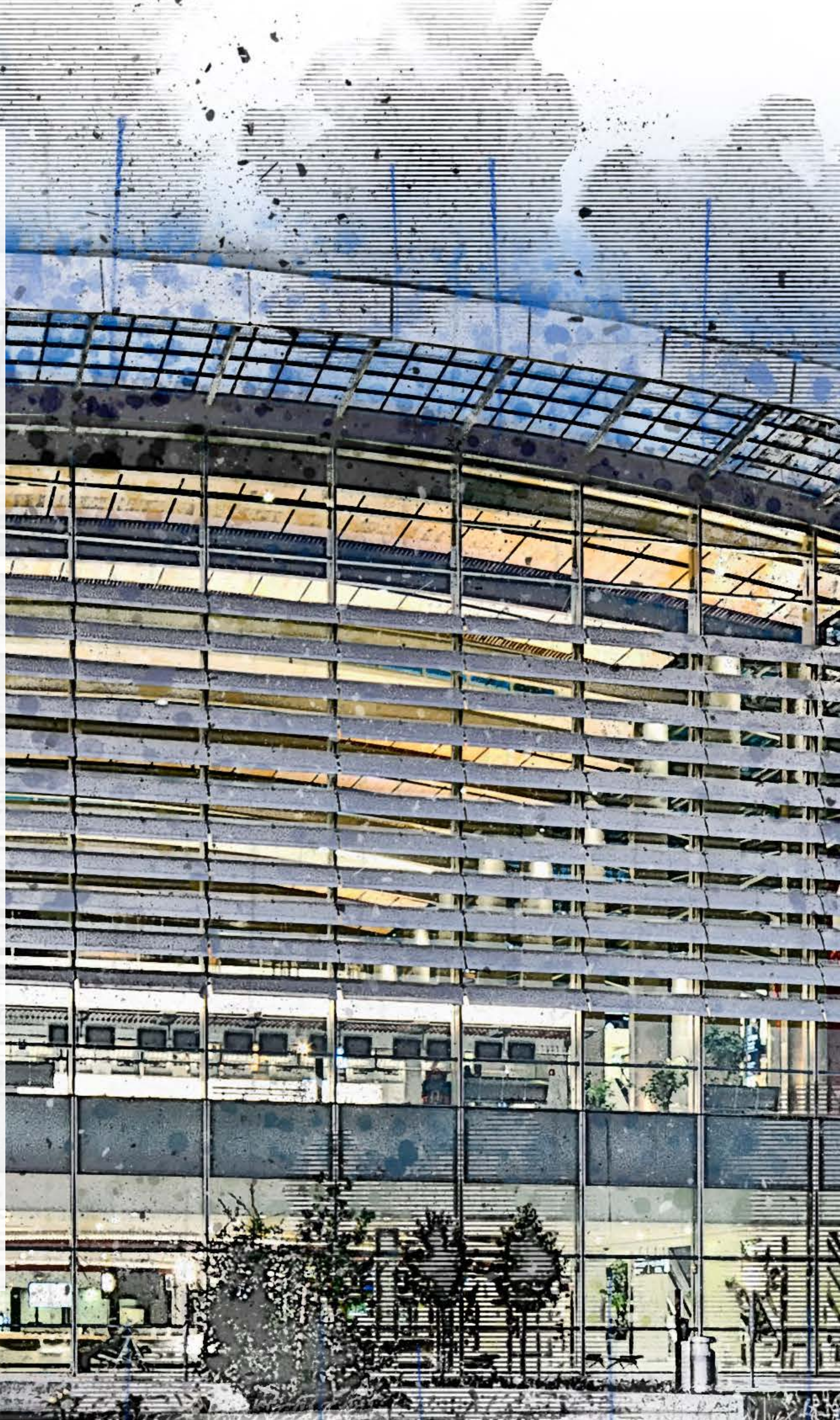

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INTRODUCTION

Facility requirements for Sacramento International Airport (SMF or the Airport) were analyzed for the following airport elements: airfield, passenger terminal, ground transportation and parking, air cargo, general aviation, airline support, airport support, and utilities. Facility requirements took into consideration forecast demand, discussions with tenants, and the age of facilities.

MASTER PLAN COMPONENTS

Airfield Requirements

Airfield facility requirements are based on the critical (design) aircraft. This analysis evaluated the airfield recommendations from the 2004 Master Plan, the need for new or modified airfield facilities to meet airport design standards, airfield/airspace demand-capacity for existing conditions versus the forecasts of future aircraft operations, and the required runway length for the existing and future fleet mix.

Passenger Terminal Complex Requirements

The requirements for various functional elements of the passenger terminal complex are based on projected passenger demand for 1) Terminal Landside: functional areas of the terminal that are non-secure and accessible to the public, such as ticketing and baggage claim lobbies, and 2) Terminal Airside: functional areas of the terminal that are secure and accessible to passengers who have been screened at a Security Screening Checkpoint (SSCP) or authorized personnel carrying the appropriate credentials.

Ground Transportation and Parking Requirements

This section summarizes requirements for key on-airport ground access and parking facilities, and describes the assumptions and methodology used to determine these requirements. Facility requirements for public and employee parking, rental car facilities, roadways, and curbsides were developed.

Air Cargo Requirements

This analysis presents the requirements that will be necessary to accommodate the cargo volumes that are forecast for SMF. For the foreseeable future, design of air cargo facilities should provide a large degree of flexibility, recognizing that the industry is subject to large changes in both traffic and technology.

General Aviation Requirements

General Aviation (GA) activity includes all flight operations by aircraft other than scheduled or charter passenger aircraft and military aircraft. GA facility requirements, expressed in terms of total land area, were developed considering activity forecasts, current leases, discussions with the fixed base operator (FBO) and other GA operators, and Sacramento County Department of Airports (SCDA) policies.

Airline Support Requirements

The requirements for each support facility area were based on discussions with SCDA staff, discussions with support facility operators, and examining forecast activity at the Airport. Fueling is a key element of airline support. The Airport's fuel farm is northeast of the aircraft rescue and fire fighting (ARFF) station, on the east side of Earhart Drive. The fuel farm is owned by an airline consortium led by Southwest Airlines and is operated by Allied Aviation under contract with Southwest.

Airport Support Requirements

Airport support requirements were assessed for airport administration, maintenance, and aircraft rescue and firefighting facilities.

This analysis identifies additional airport support facilities space (this includes concourse space) and the replacement of some support facilities within the planning period. The facilities requiring replacement are near the end of their useful life for their originally intended purposes.

Utilities Requirements

Utility service requirements were assessed for water, sanitary sewer, storm sewer, electrical, communications (telephone, internet, and cable), natural gas, and jet fuel through PAL 4. Existing demand was estimated based on a review of historical records of utilities provided by SCDA. Future demands were then estimated by scaling existing demands based on projected passenger demand.

3-1 AIRFIELD REQUIREMENTS

Airfield facility requirements are based on the critical (design) aircraft. According to FAA AC 150/5700-17, Critical Aircraft and Regular Use Determination, the critical (design) aircraft is defined as the most demanding aircraft type that uses the airport on a regular basis (defined as 500 annual operations or more). Based on the Traffic Flow Management System Count (TFMSC) data, the McDonnell Douglas MD-11F, operated by FedEx, conducted 745 operations in 2018. These FedEx operations include some operations by DC-10 aircraft (both aircraft are airplane design group IV).

The MD-11F represents the aircraft with the most demanding characteristics expected to be accommodated at the Airport. Its design characteristics are depicted in **Figure 3-1**. Based on recent discussions with FedEx, the company does not plan to retire this aircraft anytime soon and is expected to continue serving the Airport using the MD-11F through the 20-year planning period. Based on recent discussions with the passenger air carriers serving SMF, there are no anticipated short-term (5-year) changes to the fleet mix that would result in a change to the critical aircraft.

Demand-Capacity Analysis

Airfield capacity is typically defined as the maximum number of annual or peak-period aircraft operations that an airfield can accommodate. The FAA refers to this metric as the annual service volume (ASV). If demand approaches capacity, even for periods within the peak hour (busiest operational period on a given day), then costly delays may result. Conversely, for airfield facilities that have excess capacity, airports can realize cost savings by right-sizing those facilities. To evaluate the SMF system's capacity against forecast demand, airfield capacity was estimated using FAA AC 150/5060-5, Airfield Capacity and Delay, and the FAA's hourly capacity estimates for SMF that were prepared by MITRE using a capacity model called runwaySimulator.

The assumptions and inputs used to calculate the airfield capacity, include fleet mix, weather conditions, and runway use. Additionally, the model takes into account arrival and departure procedures, aircraft performance, and air traffic separation requirements.

Hourly Capacity Estimates

Hourly runway capacities were taken directly from MITRE's runwaySimulator estimates that were prepared for the FAA.

The resulting estimates of the hourly runway capacities for the various runway uses and weather conditions at the Airport for baseline and PAL 4 are summarized in **Table 3-1**. Capacity was calculated assuming 50% arrivals, meaning that the number of arrivals equals the number of departures, representing a daily average for the Airport. Hourly capacities for a given airfield, flow direction, and weather condition may differ if there are proportionally more arrivals or departures. For example, the hourly capacity may vary if the demand in that hour represents an arrival peak (for example, 70% arrivals) or a departure peak (for example, 70% departures). Weighted hourly capacity was calculated following the methodology outlined in FAA Advisory Circular 150/5060-5, Airport Capacity and Delay.

The resulting hourly runway capacities and weighted hourly capacity for the baseline and PAL 4 fleet mixes are displayed on **Figure 3-2**, and compared against peak hour demand in 2018 (34 hourly operations) and 2038 (54 hourly operations).

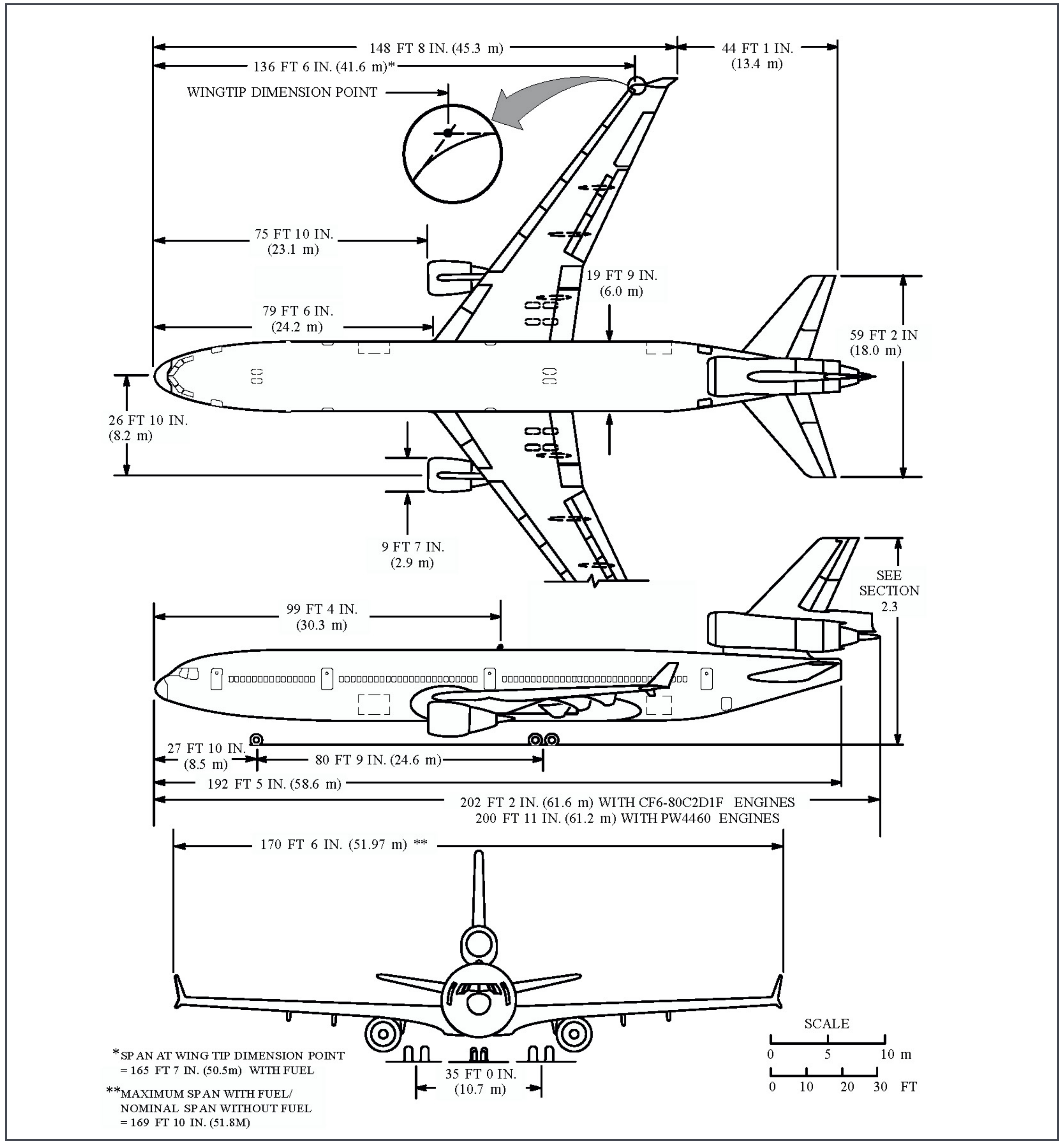
Estimated hourly runway capacity for all combinations of weather condition and runway use is above the peak hour demand for baseline and PAL 4, suggesting that delays will be minimal, and additional runway capacity will not be needed during peak hours through the forecast period.

Table 3-1 Hourly Runway Capacity

Runway use/ weather condition	Hourly Capacity (C) (a)	Runway use/ weather condition occurrence (P) (b)	Weighting factor (W) (c)	PxCxW	PxW
		Baseline (2018)			
VMC South	135	62.9%	1	84.9	53.4
VMC North	135	26.3%	1	35.5	9.3
IMC South	94.3	9.2%	15	130.1	11.9
IMC North	68	1.6%	20	21.8	0.34
			Baseline (2018) Weighted hourly capacity (Cw) = 104.9		
		PAL 4 (2038)			
VMC South	135	62.9%	1	84.95	53.4
VMC North	135	26.3%	1	35.55	9.3
IMC South	94.3	9.2%	15	130.1	11.9
IMC North	68	1.6%	20	21.8	0.34
			PAL 4 (2038) Weighted hourly capacity (Cw) = 104.9		

Sources: (a)Total hourly capacity at 50 percent arrivals calculated using Mitre's runwaySimulator analysis. (b) Analysis of runway use data from the FAA ASPM database for 2013-2018, and hourly weather observations from the National Oceanic and Atmospheric Administration (NOAA) for 2013-2018. (c) Table 3-1, AC 150/5060-5.

Figure 3-1 MD-11F AC Characteristics



Source: MD-11F Airplane Characteristics for Airport Planning, Revision "F", Issued May 2011.

Annual Service Volume

ASV is a reasonable estimate of the annual capacity of an airfield configuration. ASV is not a "hard ceiling;" rather, it has been established in practice that as the level of actual annual aircraft operations approaches ASV, there is a disproportionate increase in aircraft delays. ASV takes into account differences in runway utilization, weather conditions, and aircraft fleet mix over a one-year period.

The estimated ASV in comparison to the annual operations for Baseline (2018) and PAL 4 (2038) is shown on **Figure 3-3**. Generally, planning for airfield capacity improvements should begin when aviation activity is approaching 60% of the ASV and actual development should begin when 80% of the airfield's capacity is reached. As illustrated, ASV can accommodate the forecast demand (53% of forecast demand by PAL 4), suggesting that additional runway capacity and airfield improvements are not needed within the planning period.

Runway Length Requirements

The takeoff length requirements associated with aircraft types based on the existing and future fleet mix were evaluated using the process outlined in FAA AC 150/55325-4B; specifically, determining runway length requirements for long-haul routes at maximum takeoff weight (MTOW). **Table 3-2** summarizes runway length requirements at MTOW.

Based on a fleet mix analysis conducted in 2016, the Boeing 737-700 has the most operations at SMF, while the B767-200F, MD-11F, and DC-10 are the largest aircraft using the Airport on a regular basis.

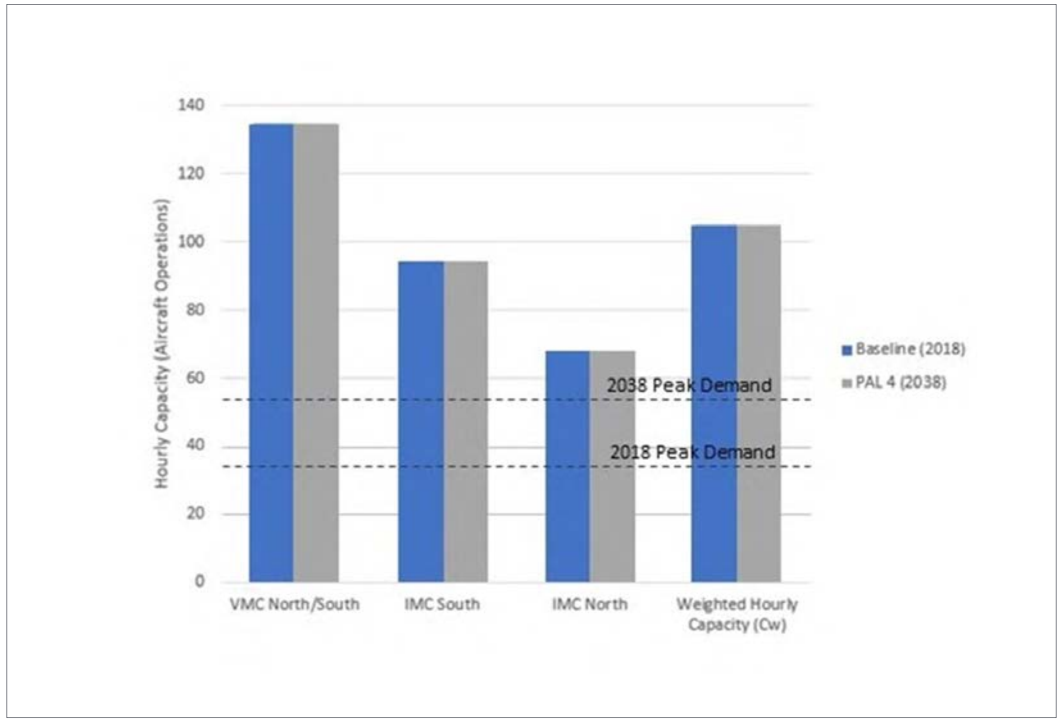
On occasion large aircraft will stop for fuel at SMF while awaiting clearance into airports in the San Francisco Bay Area during inclement weather. While some of these aircraft at MTOW may require a runway longer than that existing at SMF, these aircraft are mostly empty of fuel when they land at SMF and plan re-fueling to become airborne with less than the existing 8,605 feet of runway length. length.

Table 3-2 Runway Length Requirements at MTOW

Aircraft type	Engine type	MTOW (lbs.)	Required runway length (ft.)
B737-700	CFM56-7B-24	154,500	10,000
A319	IAE V2522-A5	167,300	8,400
A320	IAE V2527-A5	170,600	7,700
B737-800	CFM56-7B-26	174,200	9,100
A321	IAE V2533-A5	205,900	12,000
B767-200F	PW 4060	412,000	11,250
MD-11F	CF6-80C2D1F	610,000	11,200

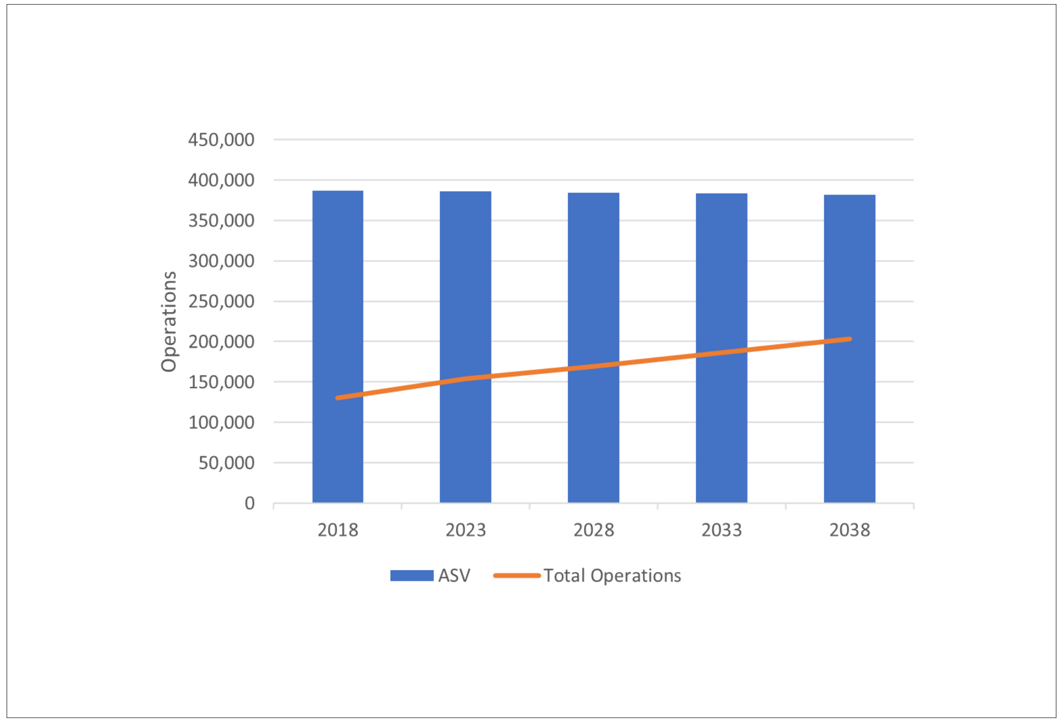
Notes: Takeoff length requirements are shown for a temperature of 94°F (mean-maximum temperature of the hottest month in Sacramento) and Airport elevation at sea level (adjusted to reflect temperature). Assumes calm wind, dry runway, and zero runway gradient. Obstacles which may limit payload are not considered within these results.
Source: Analysis of Aircraft Characteristics for Airport Planning, published by the Boeing Company and Airbus SE, JP Airline-Fleets International, 2011, and FAA AC 150/5325-4B, Runway Length Requirements for Airport Design.

Figure 3-2 Hourly Runway Capacity Vs. Peak Hour Demand



Source: MITRE's runwaySimulator estimates prepared for the FAA.

Figure 3-3 Annual Service Volume Vs. Demand



Source: Sacramento County Department of Airports, 2019.

Detailed Airline-Specific Takeoff Performance

A detailed analysis of the takeoff performance of select aircraft in the fleet mix was completed to refine the runway length requirements. For this more detailed analysis, the existing route network from the Airport was examined, and combinations of aircraft types and destinations were selected. Although heavy widebody aircraft typically require the most takeoff runway length, these aircraft types do not operate to destinations that would be considered long-haul from the Airport. Instead, runway length requirements at SMF are driven by narrow-body aircraft operating to long-haul destinations such as the East Coast and Hawaii. Long-haul service to these destinations accounted for 17.5% of passenger airline departures in 2018, with 14.5% to East Coast destinations and 3% to Hawaii.

Table 3-3 presents the results of the airline-specific analysis.

Table 3-3 Runway Length Requirements to Select Destinations

Aircraft type	Airline	Destination	Required runway length (ft.)
B737-800	United	IAD	7,100
B767-300ER	Hawaiian	HNL	6,720

Notes: Runway length requirements assume 100% passenger load factor and no belly cargo.
Source: Flight Engineering analysis, July 2018.

Changing climatic conditions will be an additional driver for longer runway lengths at SMF as ambient temperatures increase and impact aircraft performance. Hotter temperatures mean larger, heavier aircraft, traveling further, will need more runway length for takeoff. It is expected that the trend of warming temperatures will continue.

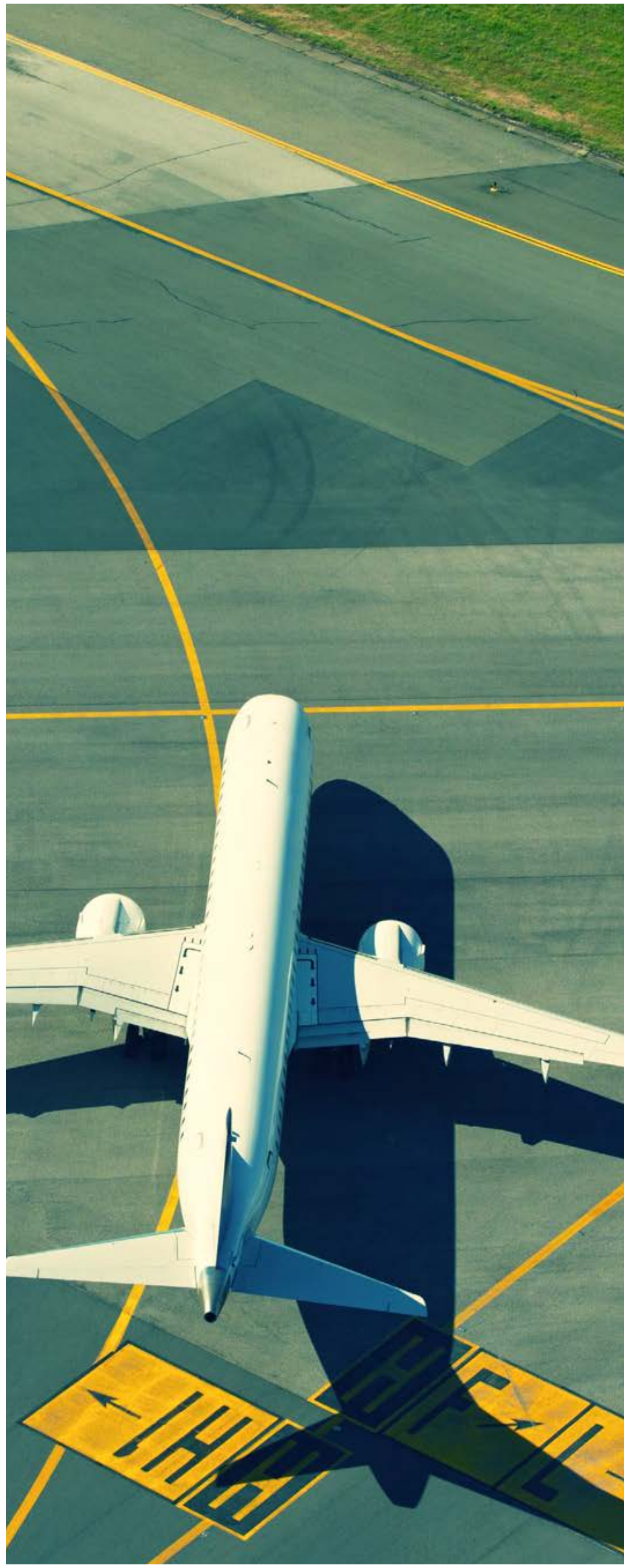
Taxiway and Operational Requirements

Discussions with SCDA operations staff and FAA SMF ATCT staff revealed areas on the airfield that contribute to airfield congestion or are operationally deficient. Although existing taxiway capacity is adequate to meet forecast demand, the following taxiway improvements would enhance the operational efficiency of the airfield system and are recommended:

- The runway exits on Runway 16R-34L are not optimally located, increasing arrival runway occupancy times. For Runway 16R arrivals, Taxiway A10 is located approximately 4,000 feet from the runway threshold, too close for most aircraft types to slow down and exit the runway. For Runway 34L arrivals, there are no high-speed runway exits and aircraft must slow before making a 90-degree turn to exit the runway. Additional high-speed runway exits for Runway 16R-34L would reduce arrival runway occupancy time.
- Improvements to taxiway fillets to accommodate the MD-11F under design requirements recommended in the recently revised FAA AC 150/5300-13A, Airport Design, are recommended and will be constructed as part of the Taxiway A reconstruction.
- Hold pads are used to sequence the departure queue or to allow aircraft not ready for departure, because of mechanical problems, weather, or other reasons, to stay clear of the departure queue without taxiing on the runway. Providing bypass capability on the ends of Runways 16L, 34L, and 34R would improve operational flexibility.
- Currently, Taxiways G1 and G2 are limited in the gross aircraft load the pavement can accommodate, however they frequently accommodate aircraft up to the size of private charters using the Boeing 757. Taxiways G1 and G2 are planned to be consolidated into one taxiway that has the pavement strength and design criteria to accommodate TDG 5 aircraft.
- Taxiway P is planned to be relocated and will continue to serve TDG 3 aircraft to the GA and FAA facilities.
- Taxiway Y4 is limited to aircraft with a wingspan less than 118 feet (ADG III) because of its proximity to Concourse B. Larger aircraft are not anticipated to use this taxiway due to its location.
- The shoulder widths of Taxiways D and Y east of Taxiway Y2 lack the 30 feet required for TDG 5 aircraft and the 30 feet required for TDG 6 aircraft.

Summary of Airfield Requirements

The results of the airfield requirements analysis indicate that there will be sufficient runway capacity to accommodate forecast demand through PAL 4. Runway capacity will exceed forecast demand through the planning period, even under poor weather conditions, suggesting that no additional runways are needed. The demand and phasing for the runway extension, currently shown on the ALP, will be analyzed in greater detail when the A321 (or similar aircraft) becomes the critical aircraft, when more long-haul routes are introduced at SMF, or when climatic conditions create enough of an impediment to aircraft performance.



3-2 PASSENGER TERMINAL COMPLEX REQUIREMENTS

The requirements for various functional elements of the passenger terminal complex are based on projected passenger demand for the following areas of the terminal complex:

- Terminal Landside: functional areas of the terminal that are non-secure and accessible to the public, such as ticketing and baggage claim lobbies
- Terminal Airside: functional areas of the terminal that are secure and accessible to passengers who have been screened at a Security Screening Checkpoint (SSCP) or authorized personnel carrying the appropriate credentials

Level of Service (LOS) "C" is used for this analysis. In the context of airport terminal planning, a LOS "C" standard means "good"; a condition of stable flow that provides acceptable throughput, and where the related systems are in balance.

Background

The passenger terminal complex at the Airport consists of two terminals and associated concourses: Terminal A and Concourse A, and Terminal B and Concourse B.

Facility requirements have been identified for the following key functional elements:

- Aircraft gates and parking
- Airline check-in
- Passenger security screening
- Holdrooms
- Checked Baggage Inspection System (CBIS)
- Automated People Mover (APM)
- Domestic baggage claim
- Outbound/inbound baggage systems
- U.S. Customs and Border Protection (CBP) facilities

Facility requirements for each of the functional elements in the passenger terminal were derived using the passenger forecast demand, and specifically the peak hour passenger forecast for PAL 1, PAL 2 , PAL 3, and PAL 4.

For Terminal A, the design hour of the Average Day Peak Month (ADPM) is between 6:00 AM and 7:00 AM when the number of departing passengers is approximately 5% of the daily departures (14,800 total departing passengers) in the base year.

- 707 passengers depart Terminal A in the peak hour (base year).

For Terminal B, the design hour of the Average Day Peak Month is between 8:00 PM and 9:00 PM when the number of departing passengers is approximately 8% of the daily departures (14,800 total departing passengers) in the base year.

- 1,185 passengers depart Terminal B in the peak hour (base year).

Table 3-4 provides a summary of peak hour passenger demand by terminal.

Aircraft Gates and Parking

The requirements analysis for aircraft gates and parking was derived from two analyses: 1) a ratio method analysis that considers turns per gate (**Table 3-5**), and 2) a design day flight schedule (DDFS) gate method analysis (**Table 3-6**).

Ratio Method Analysis

The first calculation, "no new gates, calculate turns", in **Table 3-5**, shows how much aircraft turns would grow if the future DDFS were applied to the existing gate inventory. However, it may not be reasonable to expect Terminal A to operate with 7.42 turns per gate or for Terminal B to operate with 8.47 turns per gate, without significant changes to existing airline operations. This implies a need for at least some new gates.

The second calculation, "hold turns, calculate new gates", shown in **Table 3-5**, calculates the number of new gates needed to accommodate the future DDFS while holding the existing turns per gate ratio constant. This implies that each terminal would need three or four new gates by PAL 2 and three additional gates by PAL 4 for a total increase of 13 gates at the Airport.

DDFS Gate Method Analysis

The gating analysis considers the existing aircraft gate inventory, aircraft compatibility (the number of flights in the baseline and future DDFS that can only be accommodated at one or two gates), and existing airline gate allocation. There are a few common use gates at SMF, but most are preferential use (gates are used by a specific airline), and no aircraft were gated on another airline's preferential use gate for this analysis. For purpose of this terminal analysis, gate requirements from the "Ratio Method" are used, while RON position guidance is provided by the DDFS method.

Ground Service Equipment

Ground service equipment (GSE) is stored on-airport by each airline. Furthering sustainability efforts at SMF, all contact gates at both Terminal A and Terminal B have charging capabilities for a fleet of electric GSE, including baggage tugs. However, there remains a portion of baggage tugs employed at SMF that are propane-powered, mostly servicing Terminal B.

Any terminal development, especially aircraft parking modifications, will accommodate GSE and ensure continued access capabilities. Existing Storage capacity for GSE is adequate and no airlines have expressed a need for additional space.

Holdrooms

Holdrooms are areas adjacent to the gates inside both terminals where passengers wait and queue before boarding flights.

Holdroom areas required by aircraft type, are summarized in **Table 3-7**. Common use counters, backscreens, and boarding pass scanners are provided so that any airline can use the equipment when boarding aircraft, although airline proprietary boarding equipment and procedures may limit the efficiency of operations at unassigned gates.

Table 3-7 Holdroom Areas Required by Aircraft Type

Aircraft	Typical seats (a)	Holdroom area (b) (sq. ft.)
B737-900	179	1,732
B757-200	185	1,791
A321neo	196	1,897
B757-300	234	2,265
B767-300	264	2,556
B777-200	277	2,681
A330-200	278	2,691

(a) Typical seats took the average seating arrangement of the airlines using that particular aircraft.
(b) Holdroom area required was estimated based on the methodology described in this section.
Source: Alaska Airlines, American Airlines, Delta Airlines, United Airlines.

Table 3-4 Peak Hour Passenger Demand by Terminal

Aircraft type	Base (2018)	PAL1	PAL2	PAL3	PAL4
Total Annual Passengers (Millions)	6.03	7.36	8.20	9.15	10.17
Peak Hourly Departing Passengers (Terminal A)	707	1,309	1,465	1,604	1,723
Peak Hourly Arriving Passengers (Terminal A)	892	1,220	1,286	1,448	1,454
Peak Hourly Departing Passengers (Terminal B)	1,185	1,470	1,668	1,953	2,417
Peak Hourly Arriving Passengers (Terminal B)	1,463	1,728	1,851	1,971	2,119
TOTAL PEAK HOUR DEPARTING PAX	1,590	2,667	2,945	3,233	3,502
TOTAL PEAK HOUR ARRIVING PAX	1,967	2,192	2,620	2,777	2,940

Note 1: Peak hourly departing and arriving passengers in each terminal as per DDFS.
Note 2: Total Peak hour passengers as per forecast.
Source: J|D calculations based on DDFS, March 2020.

Table 3-5 Ratio Method Gate Requirements

		No new gates - Calculate turns		Hold turns - Calculate new gates	
	Baseline DDFS Existing Gates	PAL 2	PAL 4	PAL 2	PAL 4
Terminal A	60 flights 12 gates 5.00 turns	76 flights 12 gates 6.33 turns	89 flights 12 gates 7.42 turns	76 flights 15.2 -> 15 gates +3 gates 5.00 turns	89 flights 17.8 -> 18 gates +6 gates 5.00 turns
Terminal B	118 flights 19 gates 6.21 turns	142 flights 19 gates 7.47 turns	161 flights 19 gates 8.47 turns	142 flights 22.9 -> 23 gates +4 gates 6.21 turns	161 flights 25.9 -> 26 gates +7 gates 6.21 turns
Total	178 flights 31 gates 5.74 turns	218 flights 31 gates 7.03 turns	250 flights 31 gates 8.06 turns	218 flights 38.0 -> 38 gates +7 gates 5.74 turns	250 flights 43.6 -> 44 gates +13 gates 5.74 turns

Source: J|D calculations based on DDFS, March 2020.

Table 3-6 DDFS Method Gate Requirements

Aircraft Gates and Parking – Terminal A	Existing	Baseline (2018)	PAL 1	PAL2	PAL3	PAL4
Domestic Gates	12	12	15	18	19	20
International Gates	0	0	0	0	0	0
Total	12	12	15	18	19	20
Terminal A Remote/RON Parking	7	7	12	9	13	12
Aircraft Gates and Parking – Terminal B	**Existing**	**Baseline (2018)**	**PAL 1**	**PAL2**	**PAL3**	**PAL4**
Domestic Gates	17	17	19	23	26	26
International Gates	2	2	3	4	6	6
Total	19	19	22	27	32	32
Terminal B Remote/RON Parking	13	13	16	14	13	14

NOTES:
1) This table shows aircraft parking requirements using the DDFS gating analysis method.
2) International flights are through Terminal B; however, Air Canada flights are pre-clear and use domestic gates out of Terminal A.
3) The up/down trend in remote RON positions is linked to the addition of gates, which free up remote RON positions as aircraft can remain overnight at the new gates.
Source: J|D calculations based on DDFS, March 2020.

The requirements analysis for the holdrooms focused on the median holdroom area required in each concourse for an approximate future holdroom calculation in each concourse, and the gate requirements from the "Ratio Method" analysis. For Concourse A, 1,897 square feet was used for each holdroom, and for Concourse B, 1,732 square feet was used for each holdroom. Using this median calculation, Concourse A already requires additional holdroom space, while Concourse B won't require additional holdroom space until PAL 4 (**Table 3-8**).

Airline Check-in

Airline check-in facilities provide for the processing of passengers and baggage via curbside check-in, lobby check-in, and self-service check-in.

Currently, Terminal A is arranged with a traditional linear ticket counter, with each airline staffing their own counters. Some self-service kiosks support common use operations (can be used by a passenger on any airline), while other kiosks are airline specific. All baggage collected at the counters are processed in a centralized baggage collection system.

- Capacity for Terminal A is constrained due to the original facility design, which compartmentalizes the ticketing and baggage check-in functions.
- There are four vacant agent positions in Terminal A, and three vacant skycap (curbside) positions in Terminal A.

Currently, Terminal B is arranged with island-style ticket counters distributed across the ticket hall facility. Each "island" feeds into a common Checked Baggage Inspection System (CBIS) and makeup area, allowing for a true common use operation. The use of overhead dynamic signage allows for the re-assigning of ticket counters as needed. With an appropriate setup time and because of the centralized CBIS, any airline can use any counter or kiosk for check-in of passengers and baggage, which increases capacity.

- The total number of check-in processors includes 27 unused agent counter locations in the south lobby of Terminal B, and four vacant skycap (curbside) positions.

Terminal A Check-In Requirements

There is a need for nine staffed counter spaces in the baseline. By PAL 4 there will be a need for 21 staffed counters. The existing 22 bag drop counters will be sufficient through PAL 4. **Table 3-9** summarizes the Terminal A check-in requirements.

- There is a need for five additional check-in counters by PAL 4.
- There is a need for five additional kiosks by PAL 4.
- There is sufficient check-in lobby queue space at Terminal A through PAL 4 (**Table 3-10**).

Terminal B Check-In Requirements

The number of passengers requiring staffed counter space in Terminal B for the baseline is 14, with 14 bag drop counters also required in the baseline. By PAL 4, there will be a need for 29 total staffed positions and 28 total bag drop locations. **Table 3-9** summarizes the Terminal B check-in requirements.

- No additional staffed counter space or bag drop locations are required through PAL 4.
- By PAL 4, 56 kiosks will be required to meet demand.
- There is sufficient check-in lobby queue space at Terminal B through PAL 4 (**Table 3-9**).

Passenger Security Screening

Each of the existing terminals has a single Security Screening Checkpoint (SSCP) that provides equipment and facilities where passengers transitioning from the landside to the airside, including employees, and contractors, are screened as required by the Transportation Security Administration (TSA). According to the local TSA director, the number of passengers than can be processed by a single standard lane per hour is 150, and for a single expedited (PreCheck) lane, throughput per hour is 220 passengers. The SSCP requirements are summarized in **Table 3-10**.

- Both terminals will need additional SSCP by PAL 2. Terminal B will also need additional queuing area by PAL 3.

Table 3-8 Holdroom Requirements

Holdrooms (Area in Square Feet)	Existing	Base (2018	PAL1	PAL2	PAL3	PAL4
Concourse A (based on 1,897 sq.ft./ea)	22,615	22,764	26,558	28,455	32,249	34,146
Concourse B (based on 1,732 sq.ft./ea)	43,089	32,908	36,372	39,836	41,568	45,032
Total Holdroom Area	65,704	57,569	66,559	80,910	91,467	93,364

Source: Sacramento County Department of Airports, 2019.

Table 3-9 Airline Check-In Requirements

Terminal A Number of Processors	Existing	Baseline (2018)	PAL1	PAL2	PAL3	PAL4
Agent Counters	16	9	16	17	19	21
Bag Drop Counters	22	10	16	17	19	21
Kiosks	36	19	31	34	38	41
Curbside (with Bag Check)	7	1	2	2	3	3
Lobby Queuing Space	3,715	884	1,962	2,320	2,447	2,572
Terminal B Number of Processors	**Existing**	**Baseline (2018)**	**PAL1**	**PAL2**	**PAL3**	**PAL4**
Agent Counters	48	14	18	20	23	29
Bag Drop Counters	48	14	17	20	23	28
Kiosks	44	28	34	39	46	56
Curbside (with Bag Check)	10	2	2	3	3	4
Lobby Queuing Space	12,032	1,818	2,266	2,567	3,012	3,760

Source: Sacramento County Department of Airports, 2019.

Table 3-10 SSCP Requirements

Passenger Security Screening	Existing	2018 (Base)	PAL 1	PAL 2	PAL 3	PAL 4
Terminal A: Total Number of Screening Lanes	5	3	6	7	8	8
Number of PreCheck Lanes	2	2	3	3	3	3
Total Lanes	**7**	**5**	**9**	**10**	**11**	**11**
Queuing Area (sq.ft.)	7,400	1,129	2,248	2,560	2,772	2,865
Terminal B: Total Number of Screening Lanes	6	8	7	8	9	11
Number of PreCheck Lanes	4	2	3	3	4	5
Total Lanes	**10**	**10**	**10**	**11**	**13**	**16**
Queuing Area (sq.ft.)	4,870	2,988	3,911	4,688	4,975	5,382

Source: Sacramento County Department of Airports, 2019.

Automated People Mover

Terminal B uses an APM system to shuttle passengers between the landside building and the airside concourse. The APM is a train system automatically controlled by computers and tied into the building systems.

The present configuration of the APM system is two single-car trains, each car with a design holding capacity of 65 passengers. It should be noted that the normal holding capacity is 50 passengers. The system has a 91-second cycle time, which includes headway, dwell, and door cycles. This normal cycle time can be affected by people holding the door open or otherwise delaying the trains.

The design capacity of the two-car system is 2,570 passengers per hour in each direction. The "normal" capacity of the two-car system is 1,980 passengers per hour in each direction.

- Additional cars should be added by PAL 4, which forecasts 2,417 departing passengers (**Table 3-11**).

The existing queueing space for passengers waiting for the APM is 2,457 square feet in Terminal B for departing passengers, and 3,830 square feet in Concourse B for arriving passengers (**Table 3-11**).

- The queueing area for both departing and arriving passengers is adequate through PAL 4, assuming 14 square feet per passenger (**Table 3-11**).

Checked Baggage Inspection System

Both terminals provide a CBIS consisting of conveyor equipment, controls, Explosives Detection Systems (EDS), and resolution systems for the screening of checked baggage by the TSA.

The Terminal B CBIS cannot be physically expanded, but anticipated advances in EDS screening technology will allow for additional throughput for the existing CBIS equipment in both terminals.

Design capacity of the Terminal A CBIS is 1,760 bags per hour, using 550 bags per hour for inline systems and 330 bags per hour for standalone systems. This also assumes a N+1 function of EDS machines in the CBIS. Using a factor of 0.8 checked bags per passenger, this is equivalent to 2,200 bags per hour.

- One additional EDS machine will be required in Terminal A by PAL 3 (**Table 3-12**).

Design capacity of the Terminal B CBIS is 2,750 bags per hour, assuming a N+1 function of EDS machines in the CBIS. Using a factor of 0.8 checked bags per passenger, this is equivalent to 3,438 bags per hour.

- The baggage system for Terminal B is adequate through PAL 4 (**Table 3-12**).

Passenger Baggage Claim

Passenger baggage claim lobbies are provided in both terminals for claiming of checked baggage. Passengers can check Baggage Information Display System (BIDS) monitors to see where their bags will be arriving, as well as signage to direct them to the appropriate device.

At Terminal A, passengers were assumed to gather within 10 feet of the carousels. Each carousel occupies a total area of approximately 4,336 square feet (based on actual measurement). The base requirement for space then is three carousels at 13,008 sq.ft.

- By PAL 2, the Airport will need to install one new baggage carousel at Terminal A and will need more area for claiming baggage (**Table 3-13**).

In Terminal B, the base year peak will have 441 people at baggage claim. At 1.5 feet per passenger, this equates to 585 feet of claim frontage required in the base year. Each carousel, offset 10 feet, occupies an area of 5,833 square feet (based on actual measurement). The base requirement for space then is four carousels at 23,333 square feet.

- By PAL 2, the Airport will need to install one new baggage carousel at Terminal B (**Table 3-13**).

Table 3-11 APM Requirements

Automated People Mover - Terminal B Only	Existing (2019)	Base (2018)	PAL1	PAL2	PAL3	PAL4
Cars per Train/2 Trains (1,980 Passengers/Hour/Car) - Departures	1,980	1,185	1,470	1,668	1,953	2,417
Queuing Space – Departures (sq.ft.)	2,457	912	1,132	1,284	1,504	1,861
Cars per Train/2 Trains (1,980 Passengers/Hour/Car) - Arrivals	1,980	1,463	1,728	1,851	1,971	2,119
Queuing Space – Arrivals (sq.ft.)	3,830	1,127	1,331	1,425	1,518	1,632

Source: Sacramento County Department of Airports, 2019.

Table 3-12 CBIS Requirements

Baggage Security Screening - Number of Primary EDS Machines	Existing	Base (2018)	PAL1	PAL2	PAL3	PAL4
Terminal A	3	2	3	3	3	4
Terminal B	6	3	3	3	4	5
Total	9	5	6	6	7	9

Source: Sacramento County Department of Airports, 2019.

Table 3-13 Baggage Claim Requirements

Terminal A Baggage Claim	Existing	Base (2018)	PAL1	PAL2	PAL3	PAL4
Total Presentation Frontage (LF)	495	357	488	514	579	582
Number of Carousels/Devices (165 feet/device)	3	3	3	4	4	4
Total Area for Claiming Baggage (sq.ft.)	13,008	13,008	13,008	17,344	17,344	17,344
Terminal B Baggage Claim						
Total Presentation Frontage (LF)	720	585	691	740	788	848
Number of Carousels/Devices (180 feet/carousel)	4	4	4	5	5	5
Total Area for Claiming Baggage (sq.ft.)	35,000	23,333	23,200	29,000	29,000	29,000

Source: Sacramento County Department of Airports, 2019.

Outbound/Inbound Baggage Systems

The outbound/inbound baggage systems are the portions of the conveyor belt used to provide an area for the loading and unloading of baggage carts to and from aircraft. Generally, these areas are secured and not seen by the general public, but are an important element in the operation of the facility.

Outbound Baggage Makeup

There are currently 30 cart staging positions in Terminal A, which means that baggage for 1,250 passengers can be staged simultaneously. The existing outbound baggage system will require additional cart staging positions by PAL 3, as shown in **Table 3-14**.

There are currently 89 cart staging positions in Terminal A, which means that baggage for 4,450 passengers can be staged simultaneously. The existing outbound baggage system meets demand through PAL 4, as shown in **Table 3-14**.

Inbound Baggage Handling

The total offload frontage available in Terminal A is 96 linear feet. By PAL 4, 175 linear feet will be required (**Table 3-14**).

The total offload frontage available in Terminal B is 211 linear feet. By PAL 4, 255 linear feet will be required (**Table 3-14**).

U.S. Customs and Border Protection Screening

A U.S. CBP screening facility provides for the screening of arriving international passengers for immigration status, claim of international baggage, and the processing of passengers and baggage through customs. At SMF, the facility is located in Terminal B and consists of all the offices, sterile corridors, and auxiliary facilities required to provide these functions to accommodate up to 400 passengers per hour. With minor modifications and installation of a second baggage claim device, the existing facility could accommodate almost 800 passengers per hour.

International passenger enplanements are expected to grow from 132,946 in the baseline to 318,200 by PAL 4; a growth of approximately 2.4 times baseline. The load factor is expected to stay consistent at 84%.

This high-level analysis presumed two international peak arrivals growing by a factor of 2.4 in PAL 4, which means a peak of five international arrivals can be expected by PAL 4. This high-level analysis also presumed 175 passengers per arriving flight (100% load factor), which means approximately 875 passengers can be expected to arrive in the peak hour by PAL 4.

- CBP will require expanded facilities by PAL 4.

Terminal Requirements Summary

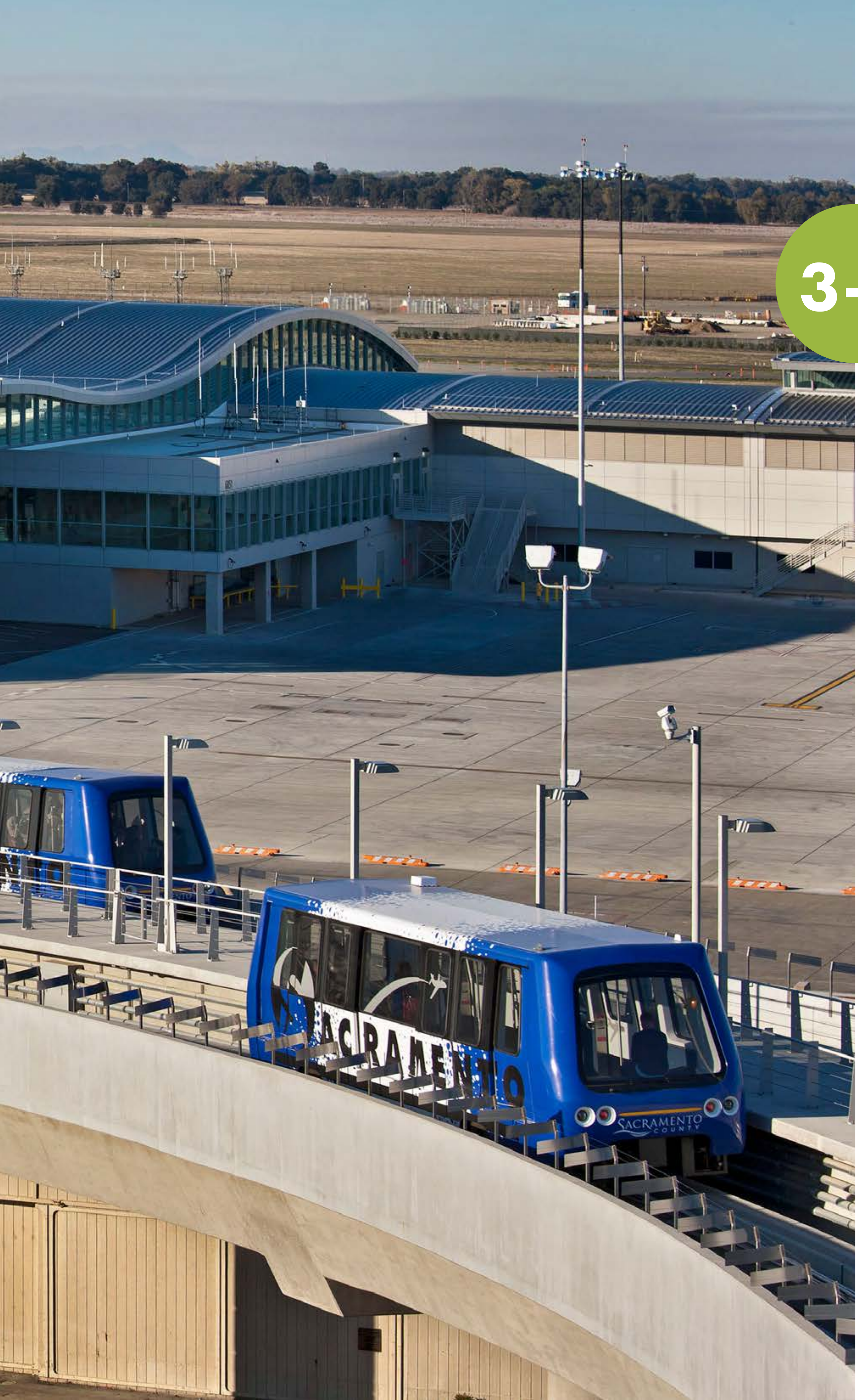
The terminal requirements analysis revealed that the following elements will require some expansion in the future years: aircraft gates, aircraft remain overnight positions, holdroom space, check-in facilities, security screening checkpoints, baggage handling systems, and CBP facilities.

To effectively meet demand and thoughtfully expand terminal facilities, further discussions are required with airlines, TSA, and other stakeholders, to understand priorities and coordinate with their individual planning efforts. Each tenant and agency are constantly evaluating their needs, level of service, and level of investment to meet passenger demand within the confines of existing terminal space. Technology and equipment trends over the years (such as common use terminal equipment and sloped plate baggage conveyors) have focused on fewer staffed ticket counters, more self-service kiosks, and less check-in baggage. Fluidity and flexibility within the terminal environment is essential to incorporating the changes in technology, methodology, and customer trends to deliver the most efficient terminal operation possible. Additional consideration must also be given to events like the 9/11 attacks and the current coronavirus pandemic, which impact space requirements. The coronavirus pandemic is causing not only airports to rethink their operations, but also airport tenants to consider new social distancing measures.

Table 3-14 Outbound/Inbound Baggage System Requirements

Outbound Baggage Makeup						
Number of Cart Staging Positions	**Existing (2019)**	**Baseline (2018)**	**PAL1**	**PAL2**	**PAL3**	**PAL4**
Terminal A	30	15	27	30	33	35
Terminal B	89	24	30	34	40	49
Total	119	39	57	64	73	84
Inbound Baggage Handling						
Offload Frontage (LF)	**Existing (2019)**	**Baseline (2018)**	**PAL1**	**PAL2**	**PAL3**	**PAL4**
Terminal A	96	108	147	155	174	175
Terminal B	211	176	208	223	237	255
Total	307	284	355	378	411	430

Source: Sacramento County Department of Airports, 2019.



3-3 GROUND TRANSPORTATION AND PARKING REQUIREMENTS

Key on-airport ground access and parking facilities include public and employee parking, rental car facilities, roadways, and curbsides. Requirements are primarily based on data and observations collected in 2017 and 2018.

Three ground transportation growth scenarios (GT1, GT2, and GT3) were prepared for this landside analysis, were considered to develop requirements for each ground access and parking component.

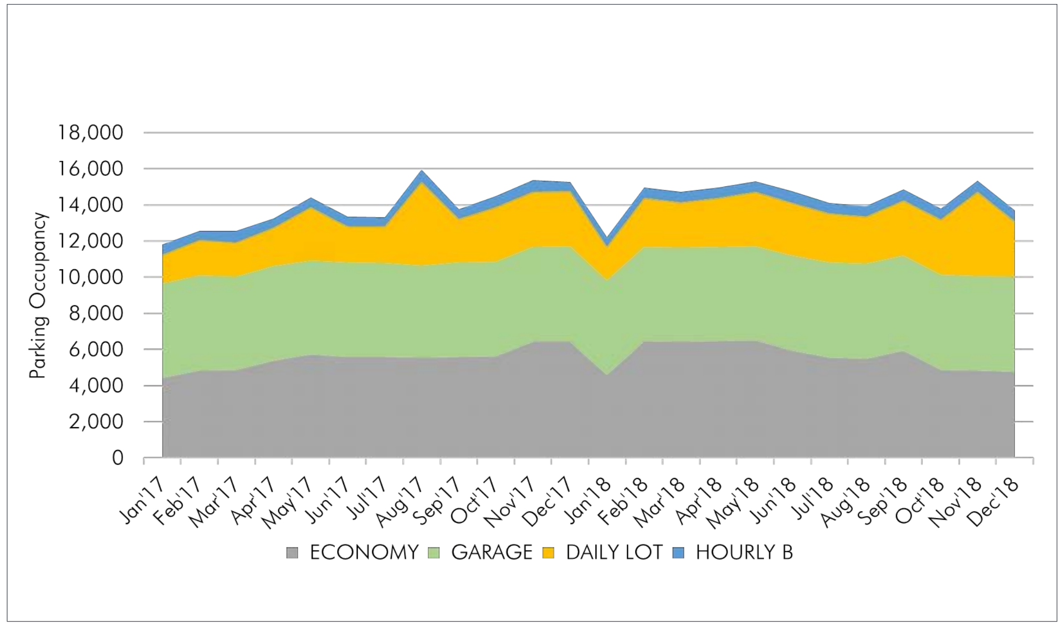
Demand for PAL 2 through PAL 4 were increased in proportion to the passenger growth forecast. The influence of transportation network companies (TNCs) on the overall mode shares also guided the three growth scenarios. **Table 3-15** summarizes the forecast for the five major ground transportation modes under three different scenarios.

Table 3-15 Ground Transportation Mode Share under three Different Growth Scenarios

Modes	2016	2017	GT 1	GT2	GT3
Parking	43.4%	39.2%	35.5%	31.8%	27.6%
RACs	19.0%	17.2%	16.1%	15.0%	13.2%
CVs except TNCs	9.6%	8.2%	6.4%	4.6%	3.1%
TNCs	5.1%	8.7%	10.5%	12.4%	16.0%
Private Vehicles	22.9%	26.7%	31.5%	36.2%	40.1%

Source: Sacramento County Department of Airports, 2019.

Figure 3-4 Observed Peak Occupancies at Individual Parking Facilities (2017-2018)



Source: Sacramento County Department of Airports, 2019.

Figure 3-5 Estimated Public Parking Needs in Different PALs

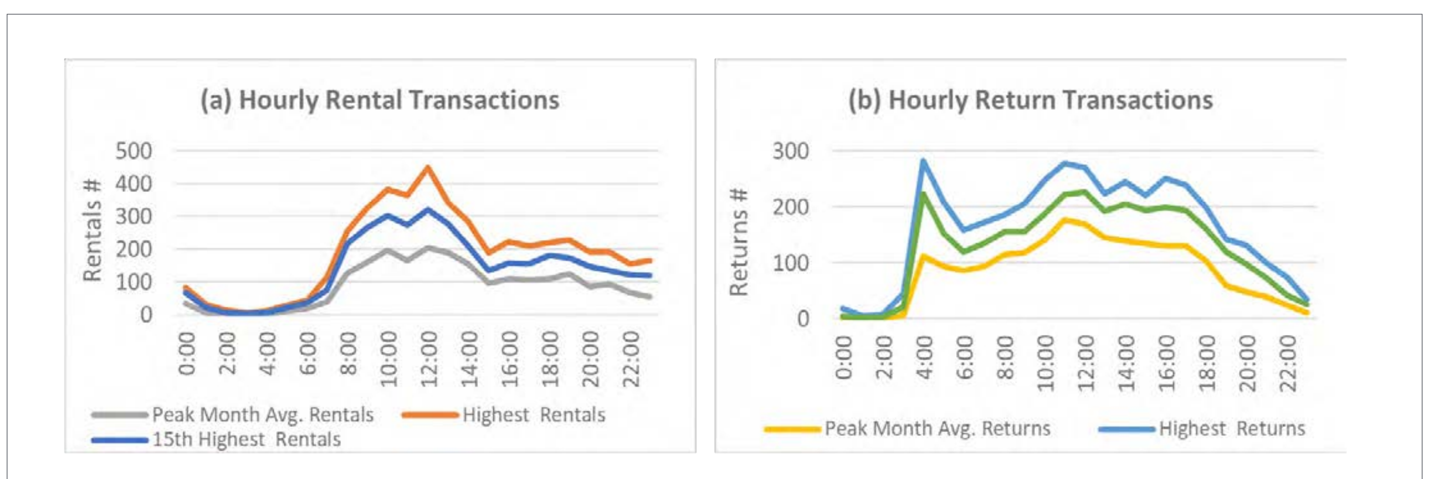
Source: Jacobsen|Daniels, 2020.

Table 3-16 Projected Total Public Parking Demand

	Baseline (2018)	PAL 1 (2023)	PAL 2 (2028)	PAL 3 (2033)	PAL 4 (2038)
Annual Transactions	1,899,773	2,075,154	2,312,510	2,581,070	2,868,251

Source: Jacobsen|Daniels, 2020.

Figure 3-6 Hourly Rental and Return Transactions at SMF



Source: Sacramento County Department of Airports (SCDA), 2019.

Public Parking Facilities

Future parking requirements are calculated to accommodate the design day parking demand. Typically, a design day is selected that represents approximately 95% of demand on the peak parking days throughout the year. At SMF however, peak demand does not occur on the same day across different parking products.

Consequently, this analysis does not attempt to define one single day as the design day. Instead, it considers the sum of peak demand observed at different facilities (i.e. the 5th busiest day of the year in 2018) to define ultimate parking demand **Figure 3-4** illustrates historical peak occupancies at SMF by different parking products.

Parking Demand and Parking Requirements

Future parking demand, presented in **Table 3-16**, is projected based on Growth Scenario 2, assuming moderate TNC growth cutting into the parking mode share, reducing it from 35.5 percent to 31.8 percent. The total parking demand is assumed to increase in proportion to the growth of originating passengers following the baseline aviation forecast. **Table 3-16** presents the total public parking demands i.e. estimated annual transactions at SMF for different PALs.

Figure 3-5 summarizes total public parking demand at SMF showing the current capacity (dashed lines) as well as future needs for close-in and remote parking facilities.

Figure 3-5 also depicts a growing parking demand at SMF. Estimated demand was projected to increase by approximately 10%, 25%, and 41% in PAL 1, PAL 2 and PAL 3 respectively, compared against 16,394 total parking spaces during the peak period in baseline (2018). Total public parking demand was projected to grow as high as 24,572 total parking spaces by PAL 4. Public parking demand is assumed to grow in proportion to passenger growth under the baseline forecast, considering a mode share cut due to moderate TNC growth.

Rental Car Facilities Requirements

Requirements for a Consolidated Rental Car facility (ConRAC) were developed using facility utilization rates based on the 15th highest hourly transactions of rental and return. The baseline needs were then projected for PAL 1 using GT Growth Scenario 2 (presented in Table 3-16) and increased in proportion to the passenger enplanement forecast to estimate the facility requirements for different PALs. **Figure 3-6** depicts an hourly rentals and returns comparison between the average transactions during the peak month (September) and the highest rental and return transactions.

Customer Service Building (CSB)

The customer service building/area is used to process rental transactions of arriving customers. **Table 3-17** presents the customer service counter facility requirements for baseline (2018) through PAL 4. The CSB is estimated to require 22,500 sq.ft. by PAL 4, which includes CSB counters, RAC administration space, lobby space, and circulation space.

ConRAC Garage

The Garage is the primary facility of a ConRAC, and is comprised of five elements:

- Ready spaces: Spaces where vehicles are parked prior to being rented by customers in a parking bay configuration.
- Return spaces: Spaces where vehicles are returned by customers in a nose-to-tail parking configuration.
- Flex spaces: Spaces that can be used for either ready or return operations and include pavement striping for both.
- Customer service booths: Transaction booths in the ConRAC Garage for premium customers who bypass CSB counters.
- Exit plaza: Security booth where all customers with rented vehicles leave the garage.

Table 3-18 summarizes the facility requirements for baseline (2018) through PAL 4 demand.

Quick Turnaround Area

The Quick Turnaround Area (QTA) is a separate facility that supports fueling, vacuuming, washing, and light maintenance of rental cars. **Table 3-19** summarizes the QTA facility requirements for baseline (2018) through PAL 4. The QTA is comprised of four parts:

- Wash bays: Drive through car wash facilities used by RAC employees to wash returned vehicles.
- Fuel/vacuum stations: Dedicated fuel pumps and vacuums used by RAC employees to refuel and clean vehicles.
- Maintenance bays: vehicle servicing sites for mechanics to perform light maintenance (oil changes and tire rotation).
- Staging spaces: Used to park returned vehicles waiting for a car wash/vacuum. Ready vehicles can also be parked in staging spaces after being processed through the QTA and before being returned to the ready area.

Table 3-17 Customer Service Area Requirements

Customer Service Area Components	Baseline		PAL 1		PAL 2		PAL 3		PAL 4	
	qty	sq ft	qty	sq ft	qty	sq ft	qty	sq ft	qty	sq ft
CSB Queue/ Counter (120 sq ft per counter)	34	4,080	37	4,440	42	5,040	45	5,400	50	6,000
RAC Admin Space (150 sq ft per counter)		5,100		5,550		6,300		6,750		7,500
CSB Lobby Space (90 sq ft per counter)		3,060		3,330		3,780		4,050		4,500
Subtotal sq. ft.		**12,240**		**13,320**		**15,120**		**16,200**		**18,000**
Circulation (25% of subtotal sq ft)		**3,060**		**3,330**		**3,780**		**4,050**		**4,500**
Total sq. ft.		**15,300**		**16,650**		**18,900**		**20,250**		**22,500**

Source: Jacobsen|Daniels, 2020.

Table 3-18 ConRAC Garage Requirements

ConRAC Garage Components	Baseline (2018)		PAL 1 (2023)		PAL 2 (2028)		PAL 3 (2033)		PAL 4 (2038)	
	qty	sq ft	qty	sq ft	qty	sq ft	qty	sq ft	qty	sq ft
Ready Spaces (345 sq ft per space)	894	308,430	1,022	352,590	1,139	392,955	1,270	438,150	1,410	486,450
Return Spaces (270 sq ft per space)	576	155,520	656	177,120	732	197,640	815	220,050	905	244,350
Customer Service Booths (600 sq ft per booth)	10	6,000	10	6,000	10	6,000	10	6,000	10	6,000
Exit Booths (1,000 sq ft per booth)	18	18,000	19	19,000	20	20,000	21	21,000	24	24,000
Exit Booth Queue Area (2,750 sq ft per booth)		49,500		52,250		55,000		57,750		66,000
Subtotal sq. ft.		**537,450**		**606,960**		**671,595**		**742,950**		**826,800**
Circulation (20% of subtotal sq ft)		**97,590**		**110,942**		**123,319**		**137,040**		**152,160**
Total sq. ft.		**635,040**		**717,902**		**794,914**		**879,990**		**978,960**

Source: Jacobsen|Daniels, 2020.

Table 3-19 Facility Requirements of the Quick Turnaround Area

Customer Service Area Components	Baseline (2018)		PAL 1 (2023)		PAL 2 (2028)		PAL 3 (2033)		PAL 4 (2038)	
	qty	sq ft	qty	sq ft	qty	sq ft	qty	sq ft	qty	sq ft
Fueling/Vac Positions (500 sq ft per position)	57	28,500	65	32,500	72	36,000	80	40,000	89	44,500
Wash Bays (2,000 sq ft per bay)	12	24,000	12	24,000	14	28,000	15	30,000	17	34,000
Maintenance Bays (1,000 sq ft per bay)	20	20,000	21	21,000	24	24,000	26	26,000	30	30,000
QTA Spaces (200 sq ft per space)	256	51,200	292	58,400	322	64,400	358	71,600	398	79,600
QTA Admin Support (175 sq ft per fuel/vac position)		9,975		11,375		12,600		14,000		15,575
QTA Storage (75 sq ft per position)		4,275		4,875		5,400		6,000		6,675
QTA Circulation around Fuel/ CW/Admin		65,681		71,531		80,650		88,500		99,081
QTA Perimeter Circulation		101,816		111,841		125,525		138,050		154,716
Total sq. ft.		305,447		335,522		376,575		414,150		464,147

Source: Jacobsen|Daniels, 2020.

Additional Storage/ConRAC Employee Parking

Rental car companies use the vehicle storage area (overflow parking) to store vehicles away from the ConRAC Garage and QTA. Dedicated parking for rental car employees is ideally provided adjacent to QTA and requires access controls.

Table 3-20 summarizes the additional storage and rental car facility employee parking requirements for the baseline (2018) year through PAL 4.

Employee Parking

The SCDA provides parking for Airport and tenant employees in eight parking facilities throughout the terminal area with a total capacity of 1,784 spaces.

Typically, airport employment grows at a lower rate than enplaned passenger forecasts. If employee parking demand grows at half of the rate of forecast aircraft operations growth, or 1.0% over 20 years, and it is assumed that facilities are relatively full in the baseline, then employee parking need grow by approximately 400 spaces to a total requirement of approximately 2,175 (**Table 3-21**).

Roadways

On-Airport

Roadway requirements are determined using observed or estimated peak hour traffic volumes to and from key traffic generators in the terminal core. Future volumes are estimated using anticipated growth in enplanements.

The peak-hour volumes are compared to roadway capacity, calculated using roadway speeds and number of lanes, assuming a desired LOS "C", and applying the highway capacity manual methods shown in **Figure 3-7**. For example, many of the airport roadways analyzed feature two lanes and speed limits of 35 mph. According to **Figure 3-7**, a 35-mph roadway performing at LOS "C" has a capacity of approximately 900 vehicles per hour, per lane, or 1,800 vehicles per hour on the roadway.

A comparison of existing and future roadway volumes to calculated roadway capacity is achieved through a volume to capacity ratio (V/C). Traffic engineering principles generally dictate that when a roadway V/C reaches 0.7, the roadway should be considered for additional lanes, and when V/C reaches 0.9, the roadway fails to perform its function.

Figure 3-8 shows the on-airport traffic generators considered in the roadway capacity analysis, along with the numbered highlighted roadway links that were evaluated.

The primary airport entry and exit roadways generally do not have sufficient capacity to accommodate future demand, and will likely need to be expanded.

There may be other minor generators of traffic such as personnel working in the public safety building, fixed based operator, ATCT, shuttle bus maintenance facility, and other facilities that are not considered in this analysis. However, the conclusions from this analysis are directionally useful.

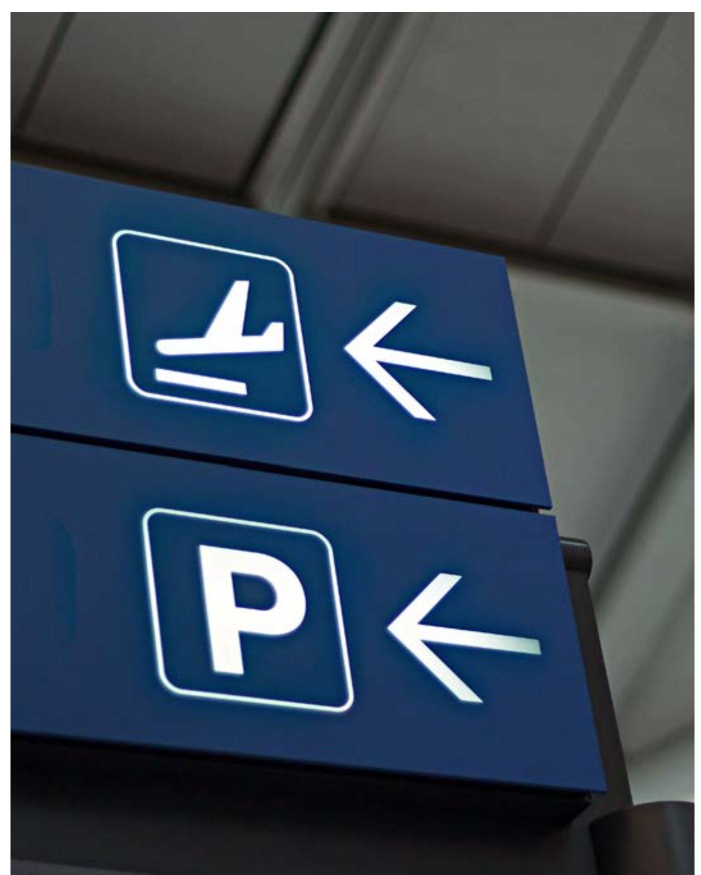


Table 3-20 Additional Storage and ConRAC Employee Parking Requirements

Additional Storage and Employee Parking	Baseline (2018)		PAL 1 (2023)		PAL 2 (2028)		PAL 3 (2033)		PAL 4 (2038)	
	qty	sq ft	qty	sq ft	qty	sq ft	qty	sq ft	qty	sq ft
Overflow Storage (200 sq ft per storage)	3,956	791,177	4,491	898,143	5,011	1,002,172	5,595	1,119,077	6,217	1,243,485
Employee Parking (345 sq ft per space)	395	136,275	415	143,089	435	149,903	454	156,716	474	163,530
Total sq. ft.	927,452		1,041,232		1,152,074		1,275,793		1,407,015	

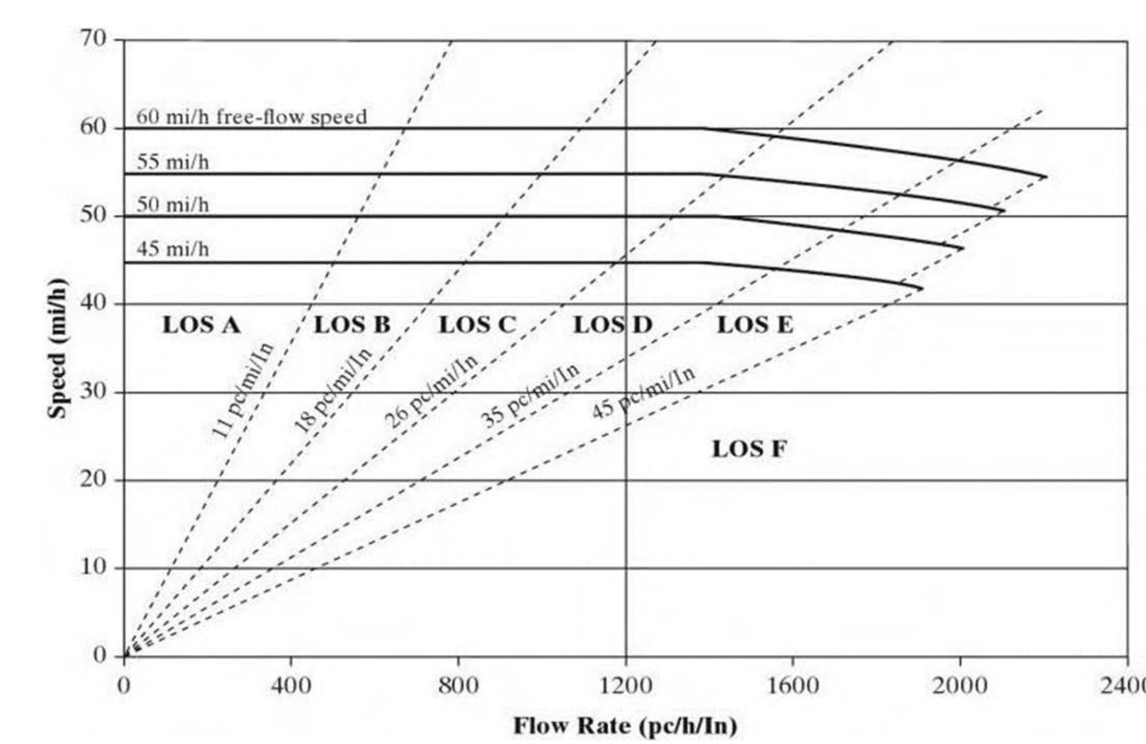
Source: Jacobsen|Daniels, 2020.

Table 3-21 Employee Parking Requirements

	Base (2018)	PAL1	PAL2	PAL3	PAL4	AAGR 2018-2038
Air Carrier Operations	118,863	129,333	142,002	156,190	171,087	2%
Employee Parking Demand	1,784	1,875	1,971	2,071	2,175	1%

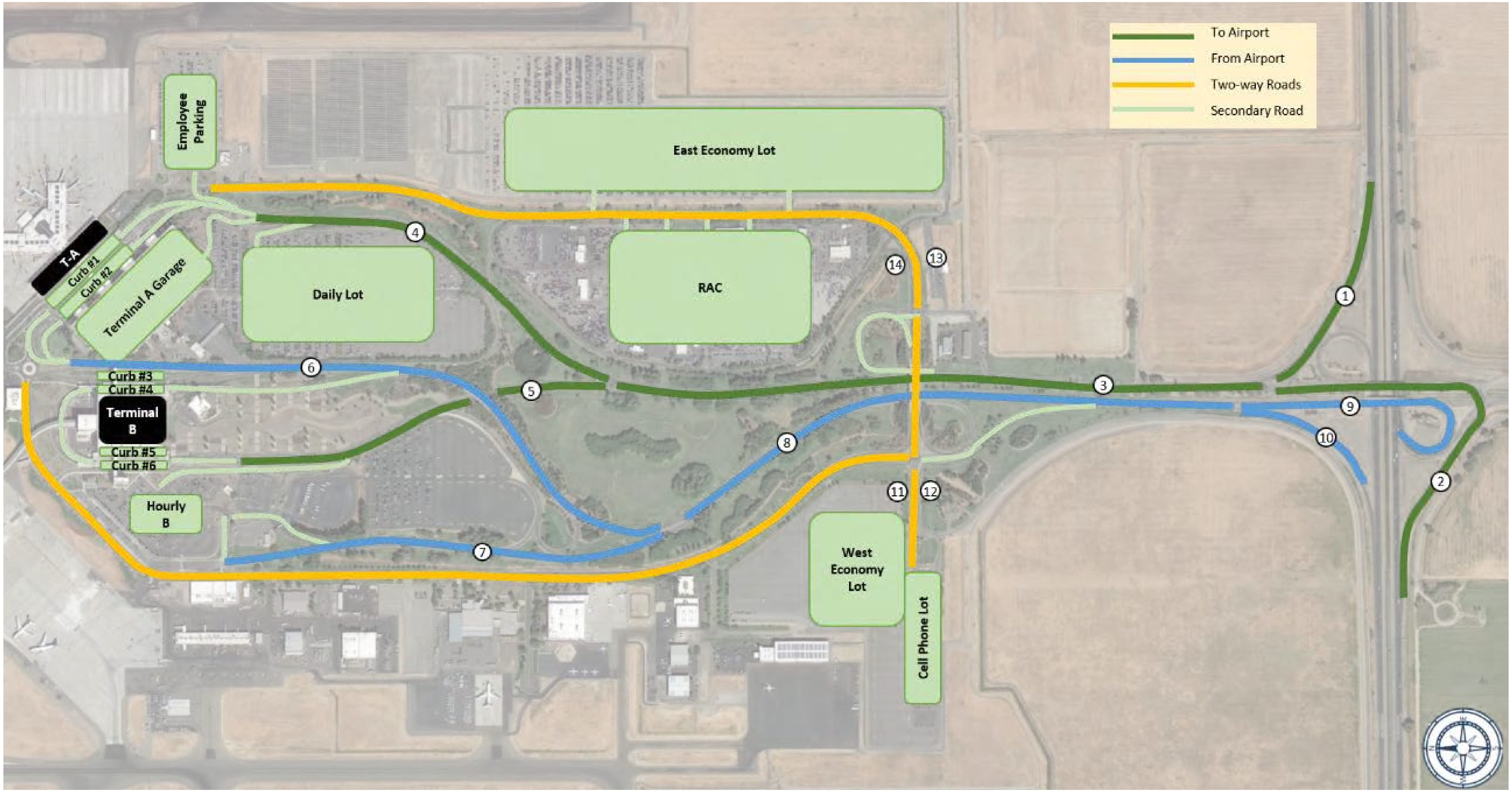
Source: Jacobsen|Daniels, 2020.

Figure 3-7 Highway Capacity Manual Roadway Capacity



Source: Highway Capacity Manual.

Figure 3-8 Traffic Generators and Roadway Links



Source: Highway Capacity Manual.

Curbsides

The curbside portion of the terminal roadways, where the primary pickup and drop-off functions are accommodated, is often the most constrained element of Airport roadway operations. For this analysis, the curbside roadways are divided into separate facilities according to:

- Passenger Terminal (A or B)
- Whether users are predominantly dropping off, picking up, or a mix of both operations
- Whether users are private vehicles, commercial vehicles, airport shuttles, or a mix of multiple user types

Curbside length requirements are determined based on the peak-hour or design hour volumes of vehicles observed on the curbside and then compared to existing facility size to determine future need.

Curbsides Requirements

Table 3-22 shows the required curbside length in the baseline and future planning activity levels. The existing total airport curbside roadway capacity is adequate through PAL 3, but capacity at each terminal or at specific curbsides may not be sufficient.

The upper level curbside at Terminal B appears to be capacity constrained on the west side in the baseline and on both east and west sides by PAL 1. However, various operational measures could be employed to increase throughput capacity, reducing the need for new curbside facilities including:

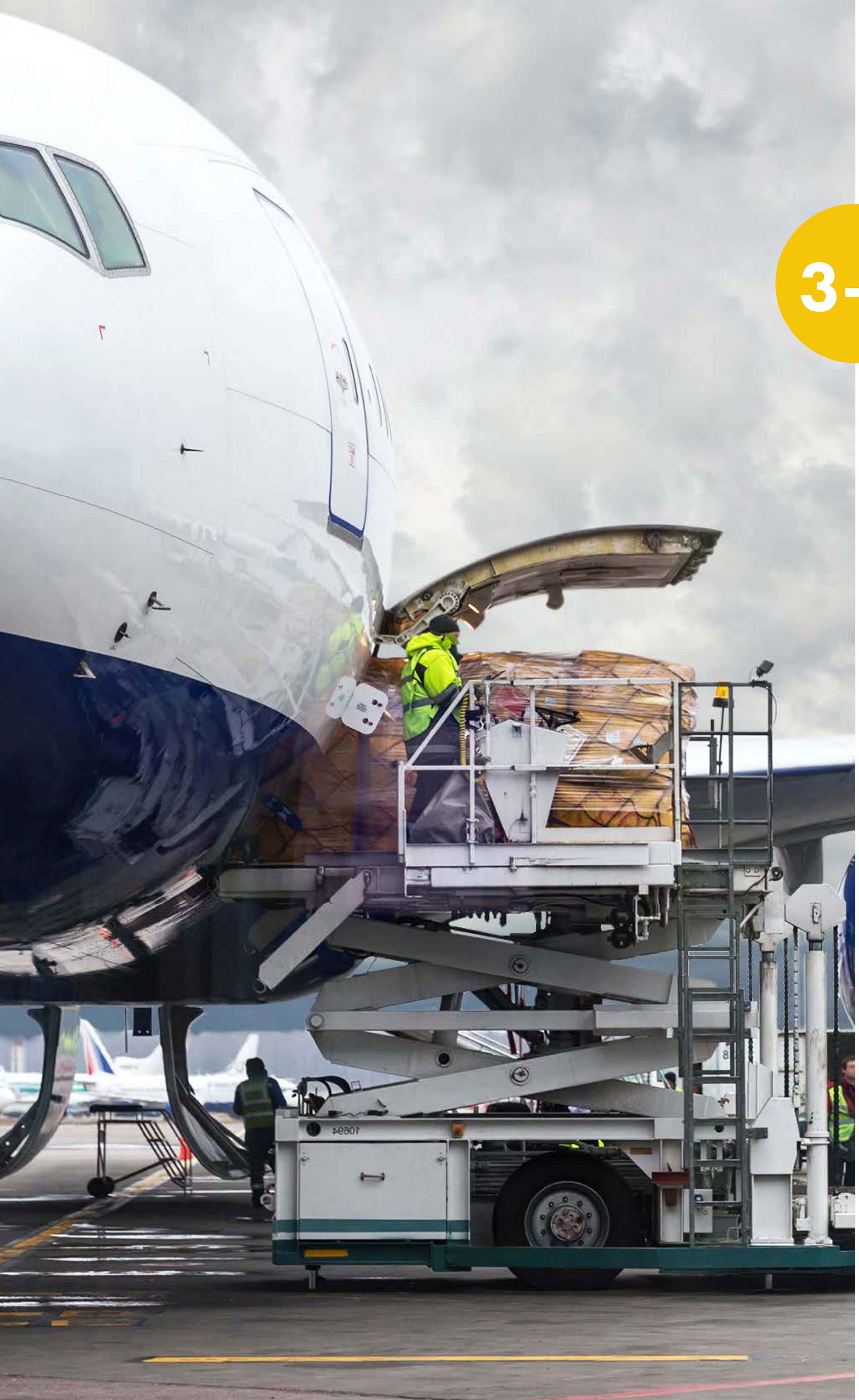
- Providing alternate drop-off locations for TNCs
- Enforcing shorter drop-off times and reducing average dwell times
- Balancing airline check-in operations between Terminal B east and west

One facility-based solution to providing alternate drop-off and pickup locations is constructing a new consolidated ground transportation center (GTC), which would offer customer service benefits and efficiencies for ground transportation operations.

Table 3-22 Curbside Capacity Summary

		Baseline		PAL 1		PAL 2		PAL 3		PAL 4	
Curbside	Existing Curb length	Hourly Volume	Curbside Required (ft)	Hourly Volume	Curbside Required (ft)	Hourly Volume	Curbside Required (ft)	Hourly Volume	Curbside Required (ft)	Hourly Volume	Curbside Required (ft)
TA Inner	825	425	725	524	875	583	950	651	1,075	724	1,150
TA Outer	825	50	240	62	240	69	240	77	320	85	320
TA GTC	1,000	106	360	131	420	146	450	162	510	180	540
Terminal A Subtotal	2,650	581	1,325	716	1,535	798	1,640	890	1,905	989	2,010
TB Upper West	425	278	500	342	600	382	650	426	725	473	800
TB Upper East	425	228	425	281	500	313	575	349	600	388	650
TB Lower West	425	196	475	241	575	269	625	300	700	334	750
TB Lower West CVs	500	51	200	63	225	70	250	78	300	87	300
TB Lower East	425	157	375	193	475	216	500	241	575	267	625
TB Lower East (Shuttles)	425	36	200	44	240	49	240	55	320	61	320
TB GTC (TNC Only)	600	159	325	196	375	218	425	244	450	271	500
Terminal B Subtotal	3,225	1,105	2,500	1,361	2,990	1,517	3,265	1,693	3,670	1,882	3,945
Airport Total	**5,875**	**1,686**	**3,825**	**2,077**	**4,525**	**2,315**	**4,905**	**2,583**	**5,575**	**2,871**	**5,955**

Source: Jacobsen|Daniels, 2020.



3-4 AIR CARGO REQUIREMENTS

For the foreseeable future, design of air cargo facilities should provide a large degree of flexibility, recognizing that the industry is subject to large changes in both traffic and technology. A major force in this change is the recent increasing demand for short term shipping from online retailers. It is anticipated that as one-day and same-day shipping becomes a greater expectation from online retail customers that the space requirements for air cargo facilities will increase.

Conversations with cargo operators indicate a strong cargo growth scenario expected across the industry, implying a need for additional space and an update to typically used metrics during cargo facility planning. The projected activity at SMF supports the high-growth scenario cargo forecast when determining future cargo facility needs; total air freight tonnage increasing from 109,197 tons in the baseline (2018) to 296,296 tons in PAL 4 (2038) with an annual growth rate of 5.1%.

Cargo Building Requirements

Using the metric of 3.5 square feet per annual enplaned ton of cargo, the estimated cargo volume for PAL4 will require warehouse capacity of approximately 1,037,036 square feet. Actual space requirements will depend primarily on the needs of individual carriers using the cargo facilities at the Airport and the type of cargo they process. For example, the express integrator carriers process time sensitive express freight, which is usually transported in full container loads passing through highly automated facilities. In contrast, passenger carrier belly hold cargo typically moves in smaller lot sizes and in break-bulk form, requiring more storage space per annual ton.

The projected air cargo building space requirements for the Airport are shown on **Table 3-23**.

Table 3-23 Air Cargo Building Requirements (High Growth Scenario)

Year	Annual Enplaned Cargo (tons)	Building Requirements (sq. feet)
2023	153,155	536,043
2028	200,167	700,585
2033	243,534	852,369
2038	296,296	1,037,036

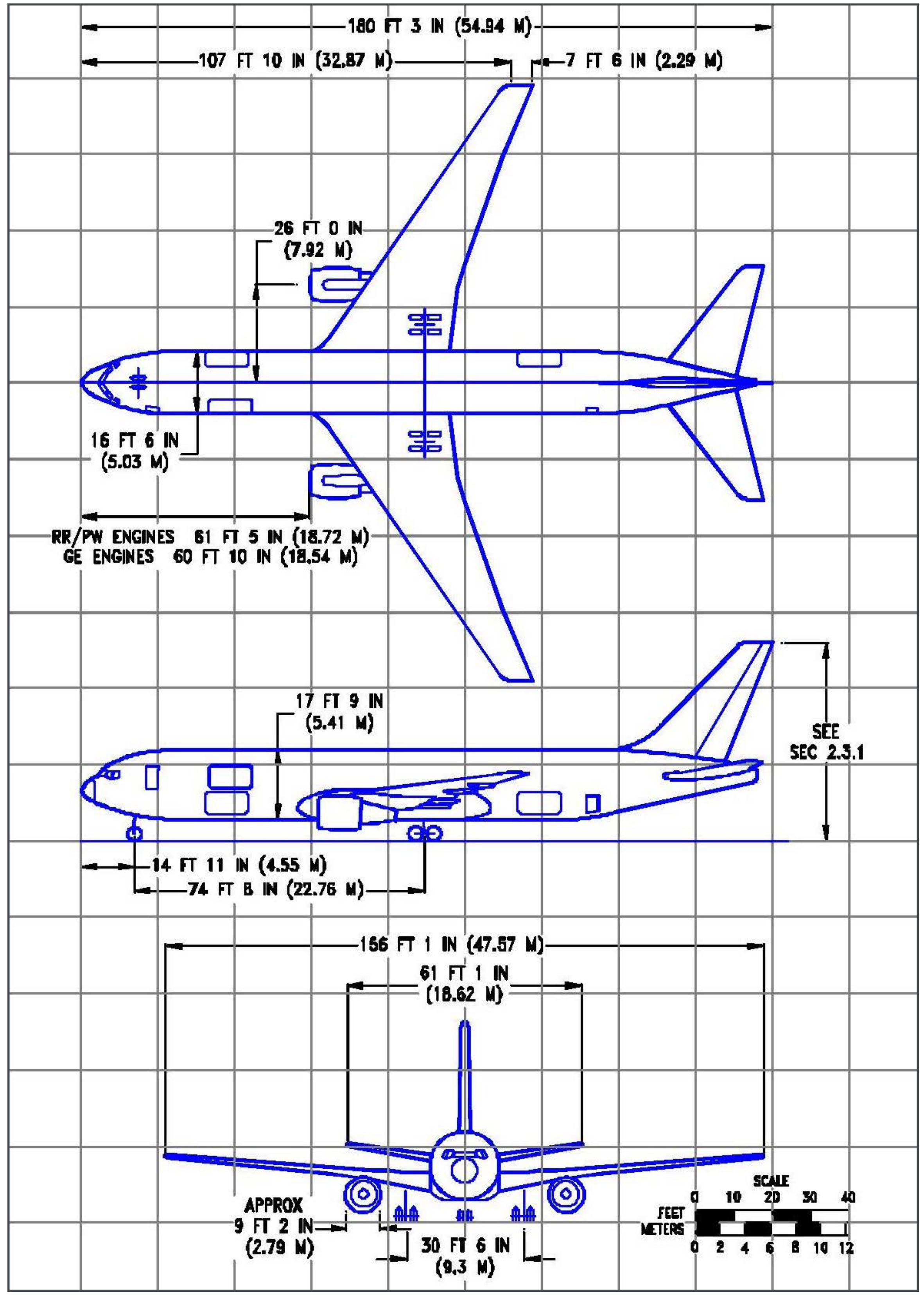
Source: Sacramento County Department of Airports, 2019.

Cargo Ramp Requirements

An air cargo apron must be sized to accommodate peak demand. The existing air cargo building aprons are in two locations: 1) the northern apron, which is 600 feet in length, and 2) the southern apron, which is 500 feet in length.

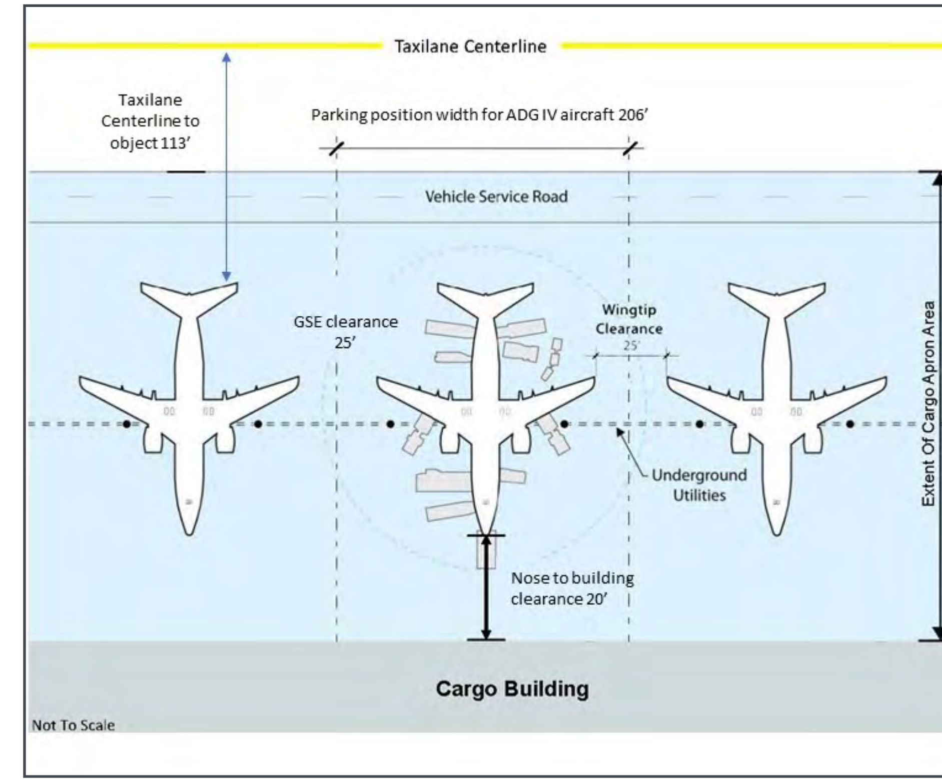
Based on discussions with cargo operators, to meet future demand, the apron should accommodate up to seventeen B-767F aircraft during a peak period. A B-767F is a typical air cargo aircraft and has a wingtip to wingtip width of 156 feet (**Figure 3-9**). ACRP Report 96, Apron Planning and Design Guidebook, defines the dimensional factors most relevant to the planning and design of apron facilities:

Figure 3-9 Boeing 767F Dimensions



Sources: Boeing 747-400 Airplane Characteristics for Airport Planning.

Figure 3-10 General Cargo Apron Layout



Sources: FAA Advisory Circular 150-5360, Airport Terminal Planning; Drawing by Jacobsen|Daniels.

- Wingspan: 156 feet for a B-767F aircraft (ADG IV)
- Clearance between the front of a parked aircraft and a building face to accommodate tug maneuvering or cargo nose loading in front of the aircraft: 20 feet nose-to-building distances of for ADG IV aircraft
- Separation between the wingtips of aircraft, as well as between wingtips and any fixed or movable object: 25 feet for ADG IV aircraft
- 5 feet of clearance between the wingtip of a parked aircraft and the edge of a marked service road
- Taxiway centerline to fixed or movable object for ADG IV: 130 feet
- Taxilane centerline to fixed or movable object for ADG IV: 113 feet

Considering these design guidelines, one B-767F requires a ramp width of approximately 206 feet. To accommodate seventeen B-767F aircraft, the required length of apron space is approximately 3,500 feet. A general apron layout is shown in **Figure 3-10**.

3-5 GENERAL AVIATION REQUIREMENTS

GA activity includes all flight operations by aircraft other than scheduled or charter passenger aircraft and military aircraft. GA covers a range of activity from recreational flights on small single-engine or multi-engine propeller-driven aircraft, to operations by larger corporate or business jet aircraft.

GA facility requirements, were developed considering the activity forecasts, current leases, discussions with the FBO and other GA operators, and SCDA policies. While GA facilities at the Airport include the Textron Aviation Sacramento Service Center, and a corporate hangar, the Airport's FBO, SACjet, handles the majority of local and itinerant GA traffic. SACjet occupies a site that consists of a 40,000-square-foot hangar used for aircraft storage and maintenance and a 6,500-square-foot building that accommodates the FBO's administrative offices, a pilots' lounge, and other crew and passenger amenities. SACjet also operates and maintains an additional 12,000 square feet of hangar space and 15,000 square feet of apron space.

Forecast Demand

The total number of general aviation operations at the Airport is forecast to increase an average of 0.3 percent per year from 2018 (8,881 operations) through 2038 (9,429 operations). Itinerant operations are forecast to grow from 6,820 in 2018 to 6,885 in 2038. Local operations are forecast to grow from 2,061 in 2018 to 2,404 in 2038. Eighteen aircraft are based at the Airport. This number is forecast to remain unchanged through PAL 4.

Requirements

As described in the FBO Lease and Development Agreement, a multi-phase expansion of the GA area at the Airport has been planned. The FBO development includes the facility needs of other GA operators on the airfield. The total land area identified for all phases of the planned expansion—including the existing site—is 1,280,000 square feet, or approximately 30 acres (planned expansion of 22 acres). Consultation with SCDA and representatives from SACjet indicates that the planned expansion of the GA site is sufficient to accommodate forecast GA demand through PAL 4.

In discussions for this master plan update, Textron has stated that while there are no defined plans regarding increasing building size or leasing additional facilities in the near term, needs may change over time as new Textron Aviation products are introduced to the market.

3-6 AIRLINE SUPPORT REQUIREMENTS

The requirements for each airline support facility area were based on discussions with SCDA staff, discussions with support facility operators, and examining forecast activity at the Airport. Fueling is a key element of airline support. The Airport's fuel farm is northeast of the ARFF station, on the east side of Earhart Drive. The fuel farm is owned by an airline consortium led by Southwest Airlines and is operated by Allied Aviation under contract with Southwest. Projected jet fuel requirements are presented in **Figure 3-11**.

Fuel Storage

The Airport's fuel farm is northeast of the ARFF station, on the east side of Earhart Drive. The fuel farm is supplied with a 12-inch-diameter pipeline owned and operated by Wickland Oil Company, and is connected to the Kinder Morgan pipeline in the City of West Sacramento.

The fuel farm includes one horizontal 2,000-gallon waste fuel storage tank, one self-contained 12,000-gallon AvGas storage tank, and three vertical 1,764,000-gallon jet fuel storage tanks. Fuel storage requirements are expressed in two ways: (1) in terms of gross tank storage volume so that SCDA can accommodate future demand for storage capacity without interfering with the business decisions of the passenger and all-cargo airlines, and (2) in terms of land area required so that SCDA can ensure that no other facilities encroach on the area required for future fuel storage development (**Figure 3-11**).

As shown on **Table 3-24**, the existing 4,762,800 gallons of jet fuel storage capacity, situated on approximately 1.7 acres of land, provides capacity well in excess of the required capacity through the end of the planning period regardless of whether the Airport designates a policy of storing three, five, seven, or nine days supply of jet fuel onsite. No additional fuel storage capacity or land area is required in the planning period. Assuming a maximum velocity of five feet per second, a common industry standard, a 6-inch supply line is sufficient to meet projected demands. Fuel is currently delivered by a 12-inch supply line, which is more than adequate to convey the Airport's projected jet fuel demands for the PALs.

In-Flight Catering

LSG Sky Chefs, which provides in-flight catering services to the passenger airlines serving the Airport, leases a 140,000-square-foot site with a 30,000-square-foot building in the area southwest of Terminal B, between the United Air Freight building and the USPS facility.

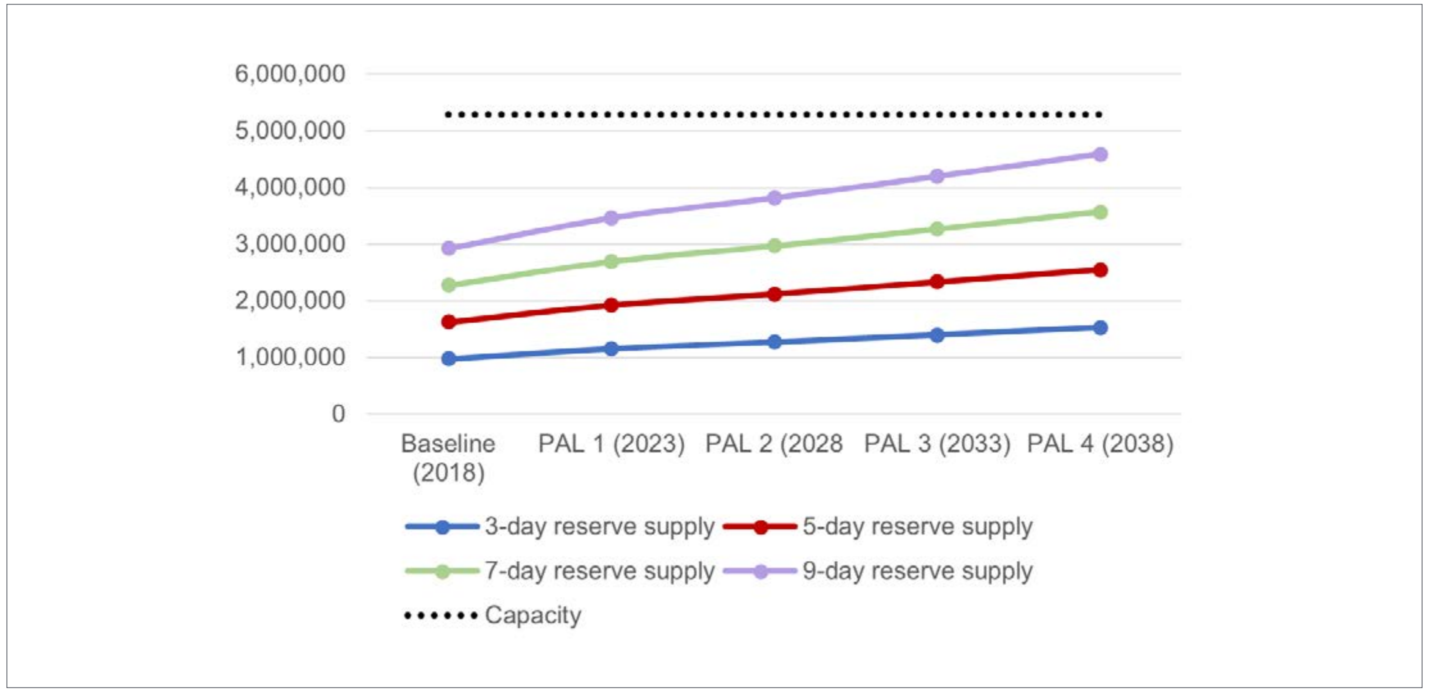
The existing flight kitchens at the Airport are adequately sized to serve forecast growth at the Airport.

Table 3-24 Projected ADPM Airline Jet Fuel Demand and Gross Storage Requirements

	Base (2018)	PAL 1 (2023)	PAL 2 (2028)	PAL 3 (2033)	PAL 4 (2038)
Annual aircraft operations	129,959	153,833	169,447	186,402	203,703
Peak month aircraft operations (8.4% of annual total)	11,436	12,866	14,172	15,590	17,038
Average day peak month (ADPM) aircraft operations	350	415	457	502	549
ADPM jet fuel dispensed per departure (gallons) (a)	1,670	1,670	1,670	1,670	1,670
ADPM jet fuel demand (gallons)	292,789	346,575	381,752	419,951	458,929
Jet fuel storage requirements (gallons) (b)					
3-day reserve supply	975,962	1,155,251	1,272,508	1,399,836	1,529,763
Land requirements (acres)	0.3	0.4	0.4	0.4	0.5
5-day reserve supply	1,626,604	1,925,418	2,120,847	2,333,061	2,549,605
Land requirements (acres)	0.5	0.6	0.7	0.7	0.8
7-day reserve supply	2,277,246	2,695,585	2,969,186	3,266,285	3,569,447
Land requirements (acres)	0.7	0.9	1.0	1.0	1.1
9-day reserve supply	2,927,887	3,465,752	3,817,525	4,199,509	4,589,289
Land requirements (acres)	0.9	1.1	1.2	1.3	1.5

(a) Based on peak-month (July 2018) activity
(b) Includes adjustment factor to account for "bottoms" in tank (90% of gross tank capacity contains usable fuel).
Source: Sacramento County Department of Airports, 2019.

Figure 3-11 Existing Capacity Compared to 3-, 5-, 7-, And 9-Day Reserves



Source: Sacramento County Department of Airports, 2019.

3-7 AIRPORT SUPPORT REQUIREMENTS

This analysis identifies additional airport support facilities space (this includes concourse space) and the replacement of some support facilities within the planning period. The facilities requiring replacement are near the end of their useful life for their originally intended purposes. Further analyses will be required to understand whether these facilities may still be utilized as storage space in lieu of demolition. However, staff and office space will need to be accommodated in a new facility.

Airport Traffic Control Tower (ATCT) is an aging facility that has been in operation since the airport's opening in 1967. A siting study, completed in 2009, recommended a new ATCT location site on the north side of the Airport (there exists a reserved plot of land on the north airfield, centrally located between the runways for a new ATCT). At this time, there are no plans to move forward with the construction of the new facility, mostly due to funding issues.

Airport Administration

SCDA occupies office space in both terminal buildings. Approximately 20,000 square feet of office space is provided across both levels of Terminal A, a portion of which houses the Communications Center as well as a large meeting room. Approximately 40 square feet of additional vacant administrative facilities are located on Level 01 of Terminal A.

SCDA administrative offices are located on Level 04 of Terminal B, occupying approximately 16,000 square feet. Other administrative spaces in Terminal B occupy approximately 3,300 square feet on Level 00; 2,000 square feet on Level 01; 8,700 square feet on Level 02; and, 600 square feet on Level 03.

- Other Airport administration staff are located outside of the terminal buildings

To keep pace with increasing levels of enplanements, it is estimated that by PAL 4, the Department of Airports will need to increase staff levels by approximately 40%. This high-level analysis is based on a ratio between existing enplanements and staff levels extrapolated to PAL 4, where it was determined that currently, administrative staff space equates to approximately 260 square feet per employee. Therefore, a 40% increase in staff will require an additional, approximately 35,000 square feet of administrative staff space.

Airport Maintenance

Airport maintenance functions are performed by a variety of groups at the Airport:

- The Call Center for maintenance requests
- Pride Industries cleans space in both terminals
- The Department of General Services (DGS) is responsible for maintenance fo SCDA facilities
- Airfield Maintenance is mainly responsible for maintenance of runways, taxiways, and ramp areas
- Equipment Maintenance
- Parks Maintenance is responsible for landscaping

Interviews with airport maintenance staff estimate that maintenance staff will grow from 79 to approximately 90 over the next five to ten year. Staffing levels are assessed annually in coordination with the budget and airport demand. Airport maintenance staff are provided accommodations at a variety of facilities on the Airport. Airport maintenance facilities include the following:

- The Physical Plant Maintenance Building
- The Airport Maintenance Building
- Electrician and Painter Trailers

Building and airfield maintenance facility needs do not necessarily increase proportionally with aviation activity, but are more a function of the overall pavement, grassy areas, terminal square footage requiring maintenance, and climatic conditions. Therefore, Airport maintenance requirements were developed based on information provided by SCDA staff, who identified a total land requirement of 18 acres, or 784,080 square feet of land for expansion in support of airport operations (which includes storage, maintenance, and refuse/recycling yards).

Aircraft Rescue and Firefighting

Sacramento County Airport Fire currently has 33 members providing Aircraft Rescue and Firefighting (ARFF), structural and wildland fire suppression, and emergency medical services (EMS). It is staffed by a crew of seven, manning two ARFF apparatus and a Type 1 engine company.

ARFF requirements and facility recommendations are provided in Title 14, Code of Federal Regulations, Part 139 (14 CFR Part 139), Certification and Operations: Land Airports Serving Certain Air Carriers. Airports certificated under 14 CFR Part 139 must comply with specific ARFF criteria, including response time requirements and extinguishing agent requirements. The regulations within 14 CFR Part 139 are used to determine the ARFF Index (A through E) for airports serving certificated air carriers. The five ARFF indices are listed in **Table 3-25**, with details of specific requirements to meet each index.

The Airport's ARFF station is currently classified as Index C.

The regulations in 14 CFR Part 139 state that Index C relates to airports where the operating aircraft are at least 126 feet long, but less than 159 feet long, with at least five daily departures. With the projected fleet mix for the Airport taken into account, it was determined that the ARFF facility will continue to be required to meet Index C standards throughout the planning period. Because the ARFF station already operates five vehicles (excluding a command vehicle), exceeding Index C requirements, it is not expected that additional ARFF equipment will be required through the planning period. However, the existing facility is nearing the end of its useful life requires replacement in the immediate future. An approximately 20,000 square foot replacement facility is currently planned with construction beginning in 2020 and anticipated completion within one year, to adequately support ARFF operations.

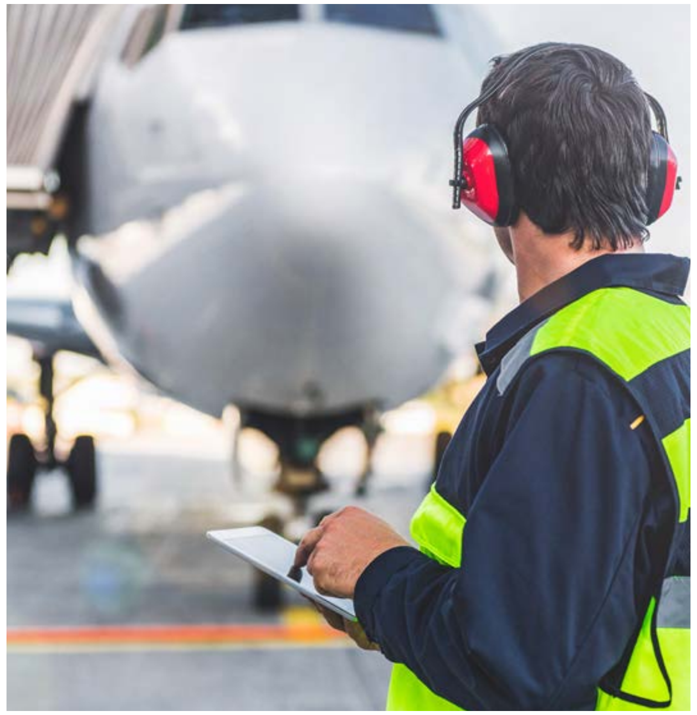
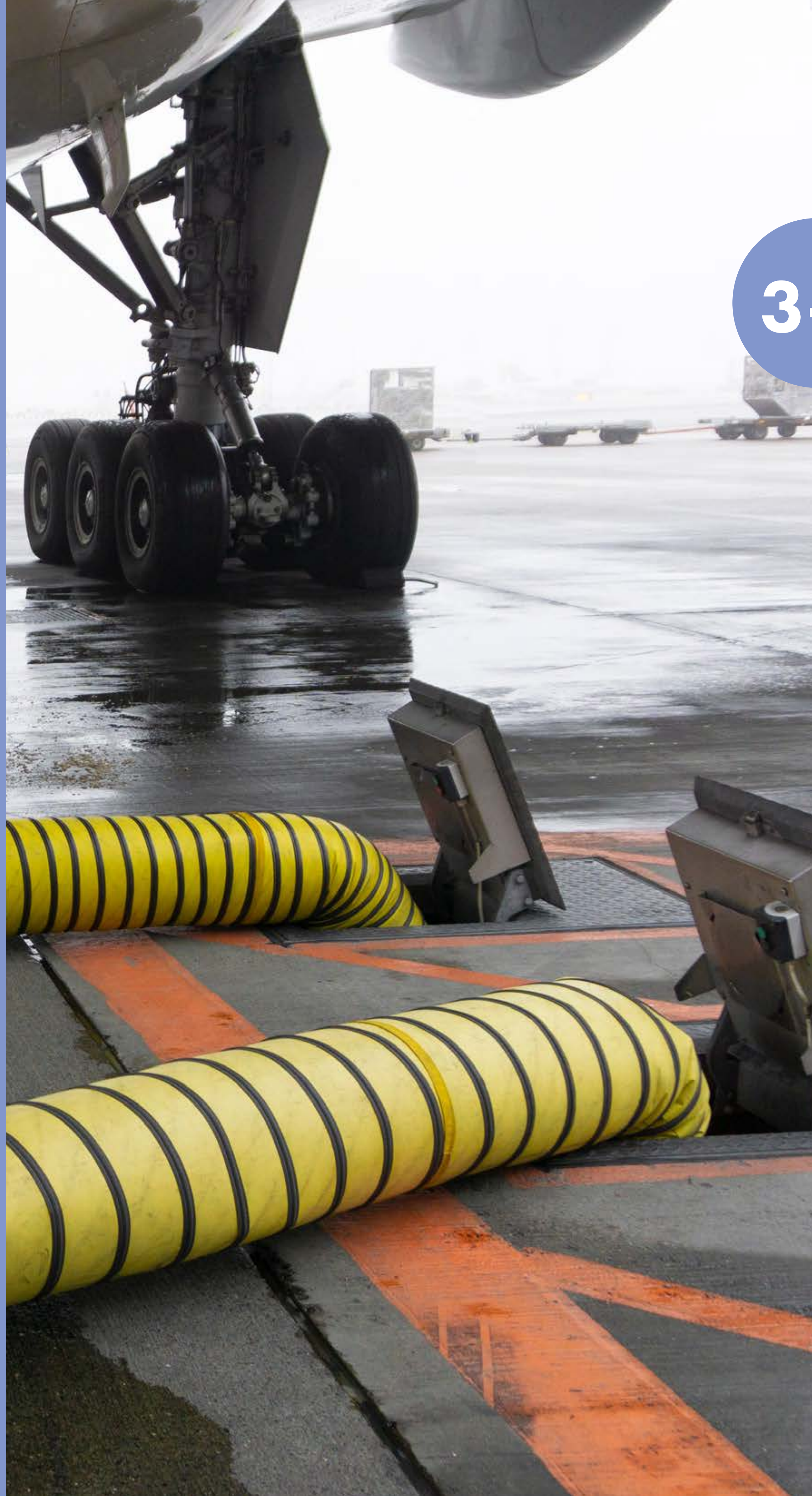


Table 3-25 Aircraft Rescue and Fire Fighting Index Classifications

Airport ARFF Index	Required number of vehicles	Aircraft length (feet)	Scheduled daily departures	Agent plus water for foam
A	1	Less than 90	More than 1	500# sodium-based DC or Halon 1211 or clean agent; or 450# potassium-based DC plus water to produce 100 gallons of AFFF.
		Greater than or equal to 90, but less than 126	Less than 5	
B	1 or 2	Greater than or equal to 90, but less than 126	More than or equal to 5	Index A plus 1,500 gallons of water
		Greater than or equal to 126, but less than 159	Less than 5	
C	2 or 3	Greater than or equal to 126, but less than 159	More than or equal to 5	Index A plus 3,000 gallons of water
		Greater than or equal to 159, but less than 200	Less than 5	
D	3	Greater than or equal to 159, but less than 200	More than or equal to 5	Index A plus 4,000 gallons of water
		Greater than or equal to 200	Less than 5	
E	3	Greater than or equal to 200	Greater than or equal to 5	Index A plus 6,000 gallons of water

AFFF = Aqueous Film Forming Foam
DC = Dry Chemical
Source: Advisory Circular 150/5220-10E, Guide Specifications for Aircraft Rescue and Firefighting (ARFF) Vehicles, June 2011.



3-7 UTILITIES REQUIREMENTS

Utility service requirements were assessed for water, sanitary sewer, storm sewer, electrical, communications (telephone, internet, and cable), natural gas, and jet fuel. Existing demand was estimated based on a review of historical records of utilities provided by SCDA. Future demands were then estimated by scaling existing demands based on projected passenger demand. The capacity of the existing infrastructure was then compared against estimated future demands.

Water

The Airport obtains its potable water from the City of Sacramento Water Treatment Plant. Water for domestic and fire protection demands is delivered to a water storage and pumping facility near the intersection of Power Line Road and Bayou Road, on the south side of Interstate 5. The projected maximum daily demand of 5.34 million gallons per day (MGD) for PAL 4 was used to determine requirements through the planning period. There is currently a 24-inch water pipeline in place originating at the SCWA off-site water storage and pumping facility and connecting to the Airport at the southern border of the site. The current 24-inch supply pipe is adequate to convey the Airport's projected water flows through PAL 4.

Sanitary Sewer

The Airport receives waste water collection service from the Sacramento Area Sewer District (SASD). Due to the general flat slope of the site, the on-site sanitary sewer collection system is relatively shallow but provides enough slope to convey sewage primarily by gravity flow. The projected daily peak flow of 0.34 MGD for PAL 4 was used to review capacity. Assuming a pipe slope of 0.5 percent, the current 18-inch-diameter Meister Way Connection has a capacity of 7.4 MGD, adequate to convey the Airport's projected wastewater flows through PAL 4.

Storm Drainage

The Airport's existing storm drainage is a gravity flow system that is bifurcated at the center of the Airport. Water on the western side of the property flows to the Airport West Ditch and water on the eastern side of the property flows to the Airport East Ditch. Once in the Ditch system, the water is then transported off the Airport property via gravity flow southward to the Reclamation District 1000 (RD 1000) West Drainage Canal to the existing RD 1000 pumping plant Number 5, where it is discharged into the Sacramento River.

Increased surface runoff and soil erosion are often associated with airport expansion. An increase in impermeable surfaces will have an effect on future storm drainage demands. Specifically, an increase in the impermeable surface area of the Airport site will cause less rainfall to percolate into the groundwater and direct more water into the drainage network increasing flows on-site and downstream of the Airport. To reduce the percent of impervious surfaces and runoff volumes on-site and off-site, it is recommended that future improvement projects use Low Impact Development (LID) and Best Management Practices (BMPs) wherever practical and effective. An example of this kind of practice would be using bioretention systems. Bioretention systems consist of depressed vegetated areas with porous engineered soils designed to capture and treat urban runoff and infiltrate treated water to the subsurface where existing site soils allow.

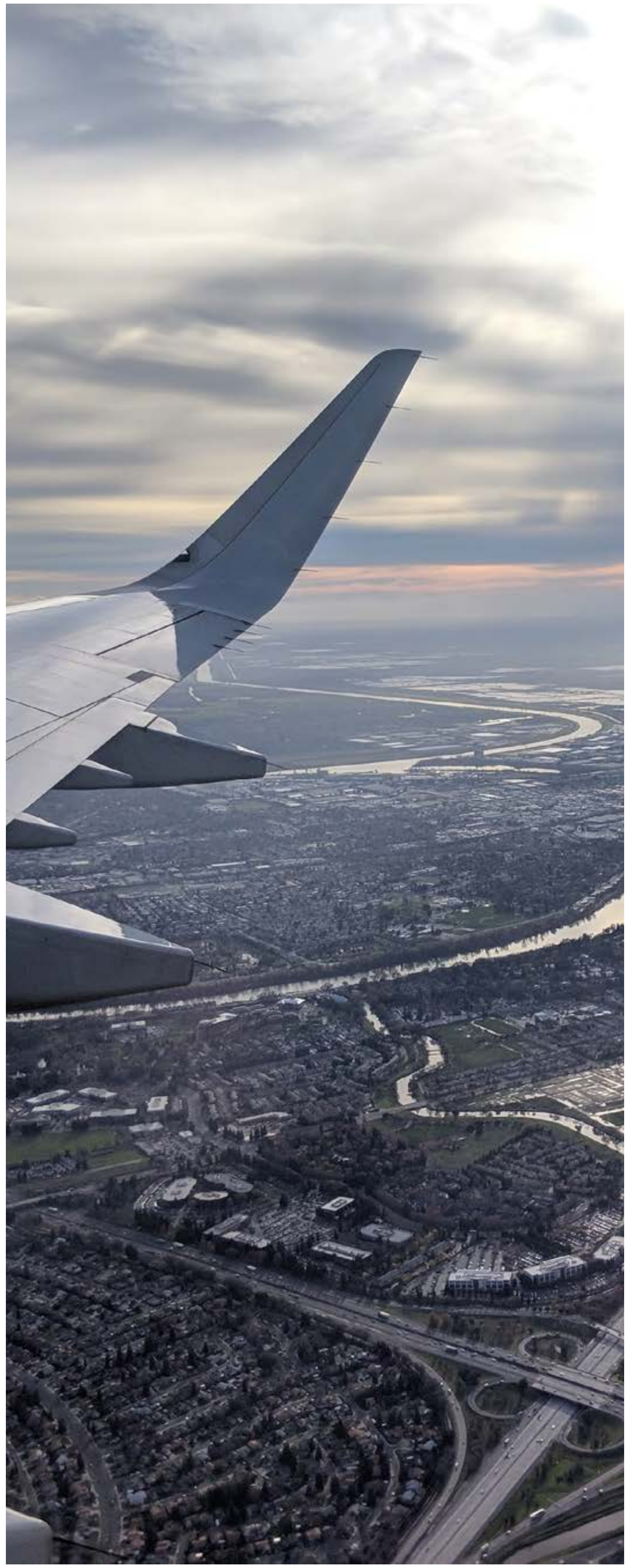
Electrical and Communications

The Airport obtains its electrical service from Sacramento Municipal Utility District (SMUD) and an on-site photovoltaic (PV) facility. During the peak month in 2018 the Airport used an average of 121 megawatt-hours (MWh) each day, this equates to an average hourly demand of 5.04 megawatts. This is well below the capacity of the two 69 kV feeder lines and PV facility currently installed. In addition to the existing electrical supply lines, spare electrical conduits have been provided along the Airport's main utility corridor for any future expansions. Given that capacity currently far exceeds demand, it is anticipated that the existing distribution system will serve all Airport facilities as needed through PAL 4.

Natural Gas

The Airport receives natural gas service from Pacific Gas & Electric Company (PG&E). The Airport is connected to a 6-inch diameter, 60-psi (pounds per square inch) PG&E distribution pipeline, which supplies a 4-inch on-site distribution line.

It was determined that the on-site 4-inch distribution loop can supply approximately 30,000 CFH, sufficient to serve all Airport facilities beyond PAL 4.



SACRAMENTO
COUNTY

DRAFT MASTER PLAN UPDATE - ALTERNATIVES

JACOBSEN|DANIELS
Date: July, 2020

SACRAMENTO COUNTY

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4.1 INTRODUCTION AND APPROACH

This chapter summarizes the alternatives evaluated to satisfy the facilities and land area requirements identified for Sacramento International Airport (SMF or Airport) through the end of the planning horizon, as presented in *Section 3 - Facility Requirements*.

Alternatives and/or recommendations were developed for the following facilities:

- Passenger terminal (specifically Remain Overnight (RON) Parking and aircraft gates)
- Ground transportation (GT) and parking (specifically passenger and employee parking, rental car facilities, curbsides, and access and circulation roadways)
- Support facilities (specifically air cargo, general aviation (GA), and airport/airline support)

Alternatives to meet the equipment and space requirements inside each terminal, identified in *Section 3 - Facility Requirements*, will be analyzed in a separate study when specific planning activity levels (PALs) are approaching and the terminal area is nearing capacity and requires expansion. This type of terminal study will be conducted after adoption of this Master Plan Update.

The preferred airfield alternative from the 2004 Airport Master Plan and 2017 environmental addendum is carried forward as there are no airfield capacity issues projected at SMF through the forecast period.

Four PALs were identified to represent future activity and enplaned passenger numbers at which key Airport improvements will be necessary. For any number of reasons, aviation activity (operations) and the quantity of enplaned passengers may be realized at different times from those anticipated in *Section 2 – Forecasts*. Recessions, such as those caused by the financial crisis of 2008 and the coronavirus pandemic of 2020 are expected, and will continue to impact airport activity. Because airport development is tied to planning activity levels (PALs) and not specific forecast years, the impact of the coronavirus pandemic on development will be an approximate five to 10-year delay.

PALs 1, 2, 3, and 4 correspond to the enplaned passenger levels currently forecast for the years 2023, 2028, 2033, and 2038:

- **Baseline (2018)** – 6.0 million enplaned passengers
- **PAL 1 (2023)** – 7.4 million enplaned passengers
- **PAL 2 (2028)** – 8.2 million enplaned passengers
- **PAL 3 (2033)** – 9.1 million enplaned passengers
- **PAL 4 (2038)** – 10.1 million enplaned passengers

Alternatives are intended to provide the Sacramento County Department of Airports (SCDA or Department) with a comprehensive summary of options for developing facilities at SMF and ultimately deciding on a preferred development plan.

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4.2 AIRFIELD

The results of the airfield requirements analysis in *Section 3 – Facility Requirements* indicate that there will be sufficient runway capacity at the Airport to accommodate forecast demand through PAL 4. Runway capacity is expected to exceed the forecast demand through the 20-year planning horizon of this Master Plan Update, even during poor weather conditions (instrument operations).

The need for a runway extension was analyzed in the 2004 SMF Master Plan. At the time of that analysis, the critical aircraft was the B-747-400ER. At maximum gross take-off weight and at standard day and hot day temperatures, a runway length of 11,000 feet was needed for the B-747-400ER to fly non-stop from SMF to London or Frankfurt (without the runway extension, these flights would require a fueling stop). The north end of Runway 34R was determined to be the preferred location for an extension relative to airfield configuration as well as runway protection zone requirements.

As shown in Table 4-1, most European destinations are located 4,500 to 5,000 nautical miles (nm) from SMF. Middle Eastern hub airports, such as those serving Ankara and Dubai, are 6,000 to 7,000 nm from SMF.

Passengers at the Airport traveling to European destinations either drive to San Francisco International Airport (SFO) or take a connecting flight. Most of the destinations listed in Table 4-1 are served by widebody aircraft, as shown in Table 4-2. These widebody aircraft are capable of flying 7,000 to 8,000 nm.

Table 4-1 Select Airports and Distances from SMF

Destinations	Nautical Miles*
Dublin Airport	4,400
Heathrow Airport	4,600
Amsterdam Airport Schiphol	4,700
Charles de Gaulle Airport	4,800
Frankfurt Airport	4,900
Madrid Barajas International airport	5,000
Istanbul Ataturk Airport	5,900
Dubai International Airport	7,000

**Rounded to the nearest hundred*

Source: OAG Worldwide Aviation Ltd. Online database, assessed February 2016

Table 4-2 Key Interntional Airports Served and Type of Aircraft Used on these Routes from SFO

Destinations (airports) Served from San Francisco International Airport	Most Frequently Used Aircraft (Maximum Range in Nautical Miles*)
Heathrow Airport	B747-400 (6,800)
Amsterdam Airport Schiphol	B747-400 (6,800)
Frankfurt Airport	B747-400 (6,800)
Dublin Airport	A330-200 (7,200)
Istanbul Ataturk Airport	A380-800 (8,000)
Charles de Gaulle Airport	A380-800 (8,000)
Madrid Barajas International Airport	B777-300ER (8,300)

**Rounded to the nearest hundred*

Source: OAG Worldwide Aviation Ltd. Online database, accessed February 2016

The current runways (8,605 feet in length) at SMF can support some international and long-haul destinations using aircraft such as the Boeing 787-900 and Boeing 767-300ER. A 10,500-foot-long runway (requiring an extension of almost 2,000 feet) would allow some commonly used widebody aircraft to directly serve those international and long-haul markets from SMF.

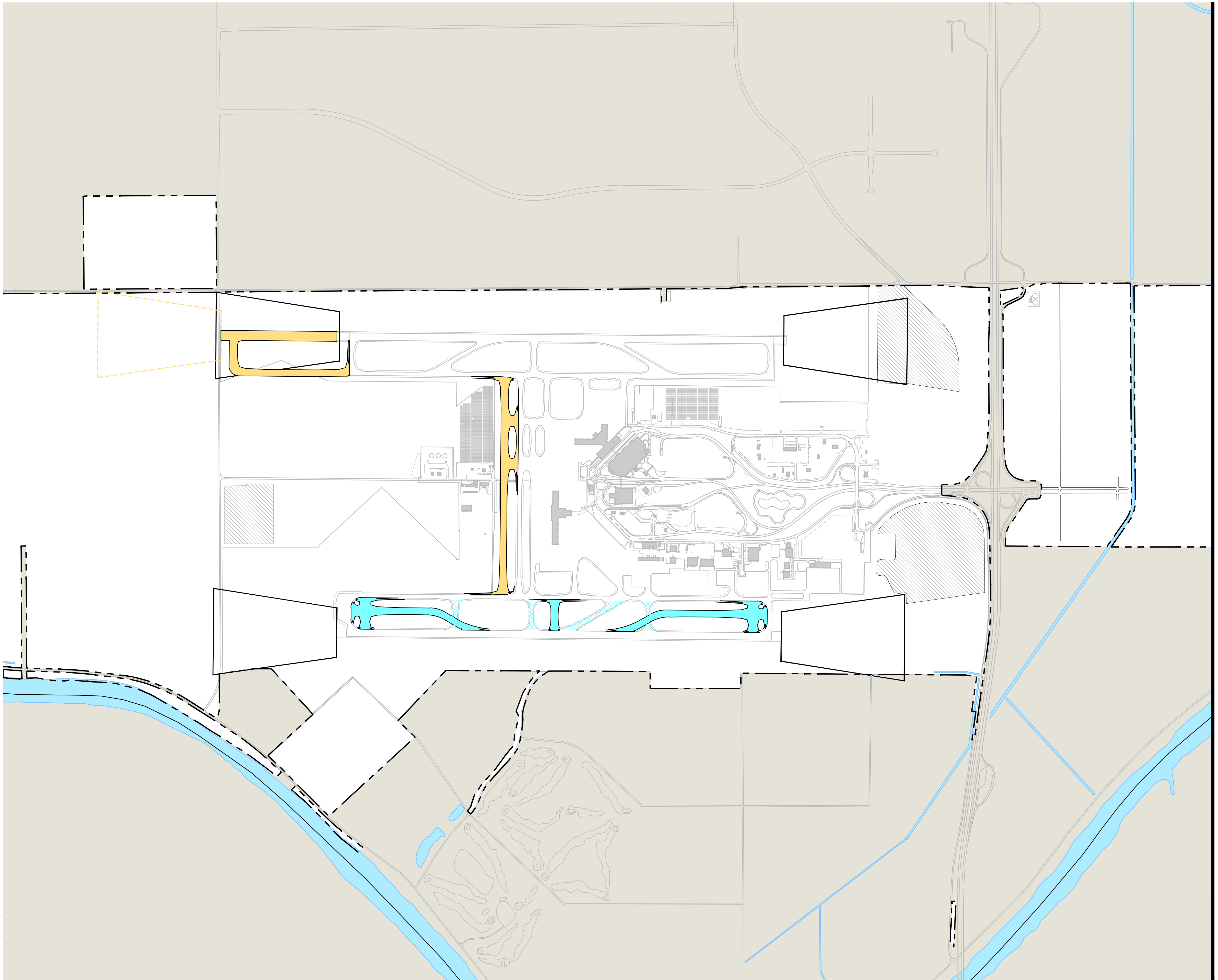
It should be noted that the Sacramento County Department of Airports (SCDA or the Department) has initiated the process to update the Airport's runway headings from 16R/34L and 16L/34R to 17R/35L and 17L/35R, respectively, to accommodate for the continuous shift in magnetic heading. Department staff will remove and replace the existing runway markings as well as submit the required documents to record the updates with the appropriate governing offices in 2020. All associated operational procedures and airport documentation will be updated as well.

4.2.1.1 Airfield Recommendation

Regular discussions with SCDA staff and tenants related to future aircraft types, flight performance characteristics, payloads, and destinations will determine when, or if, a runway extension is warranted at the Airport. Technological advancements in aircraft performance have not driven a critical need for a runway extension at SMF, but the runway extension will continue to be depicted on the ALP (Figure 4-1) until the need is no longer warranted or a different analysis is conducted.

The demand and phasing for the runway extension, currently shown on the ALP, will be analyzed in greater detail when the A321 (or similar aircraft) becomes the critical aircraft, when more long-haul routes are introduced at SMF, or when climatic conditions create enough of an impediment to aircraft performance.

Existing taxiway capacity is adequate to meet forecast demand. The taxiway improvements shown on the ALP (Figure 4-1) will enhance operational efficiency and meet Federal Aviation Administration (FAA) design standards. These include the holdpads and high-speed, perpendicular taxiway exits for Runway 16R/34L.



LEGEND

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

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FIGURE 4-1

AIRFIELD IMPROVEMENTS

Sacramento International Airport Master Plan
July 2020

File: Master Plan Projects.dwg (Tab: Airfield Improvements)

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4.3 PASSENGER TERMINAL

In analyzing the terminal requirements (*Section 3*), existing terminal capacity in Terminal A and Terminal B was compared with forecast demand. Industry standards and models were used to determine terminal functions and deficiencies for each PAL. The conclusion of that analysis revealed deficiencies in the following areas:

- Aircraft Gates
- Aircraft Remain Overnight Parking
- Holdroom Space
- Passenger Check-in Facilities
- Passenger Security Screening Checkpoints
- Baggage Handling Systems
- Customs and Border Protection Facilities

Alternatives to add aircraft gates and accommodate aircraft parking at SMF are considered in the following sections. Alternatives to meet the equipment and space requirements inside each terminal will be analyzed in a separate study when specific PALs are approaching and the terminal area is nearing capacity and requires expansion.

4.3.1 TERMINAL EXPANSION ALTERNATIVES

To determine the gating and aircraft parking requirements for both terminals, the Ratio Method and the Design Day Flight Schedule (DDFS) gating analysis methods were used.

The Ratio Method gating analysis, discussed in *Section 3 – Facility Requirements*, considers turns per gate, and determines that Terminal A will need up to an additional six gates by PAL 4, and Terminal B will need up to an additional seven gates by PAL 4, for a total of 13 additional gates.

The DDFS Method gating analysis, also discussed in *Section 3 – Facility Requirements,* determines that up to eight additional gates are needed at Terminal A, and up to 13 additional gates are needed at Terminal B for a total of 21 additional gates by PAL 4.

For the purpose of this Master Plan Update, the Ratio Method gating analysis is used to examine terminal expansion alternatives. To satisfy demand for 13 gates under the Ratio Method gating analysis, three terminal expansion alternatives were considered for the 20-year planning horizon (through PAL 4). All three alternatives propose construction of a new security screening checkpoint (SSCP) area, which creates a central processor for passengers accessing Terminal B gates, and addresses the need for additional screening lanes and queuing area discussed in *Section 3 – Facility Requirements*. A passenger walkway is also constructed for automated people mover (APM) redundancy, to connect the landside and airside facilities.

- Alternative 1 (Figure 4-2) – Concourses A and B are expanded linearly. An Alternative retained from the 2004 Airport Master Plan, Concourse B receives expansions on both the east and west ends of the concourse for an additional 10 gates. Concourse A adds three additional gates on the north end (this includes Gate A13).
- Alternative 2 (Figure 4-3) - Concourse B is expanded from its west end, to the southwest at 45-degrees, which provides 10 additional gates. Concourse B is also expanded linearly to the east, which provides two additional gates. In this alternative, Gate A13 in Concourse A has been added back in use.
- Alternative 3 (Figure 4-4) –A new Concourse C is constructed parallel to, and south of, Concourse B to accommodate up to 12 new gates. In this alternative, Gate A13 in Concourse A has been added back in use.

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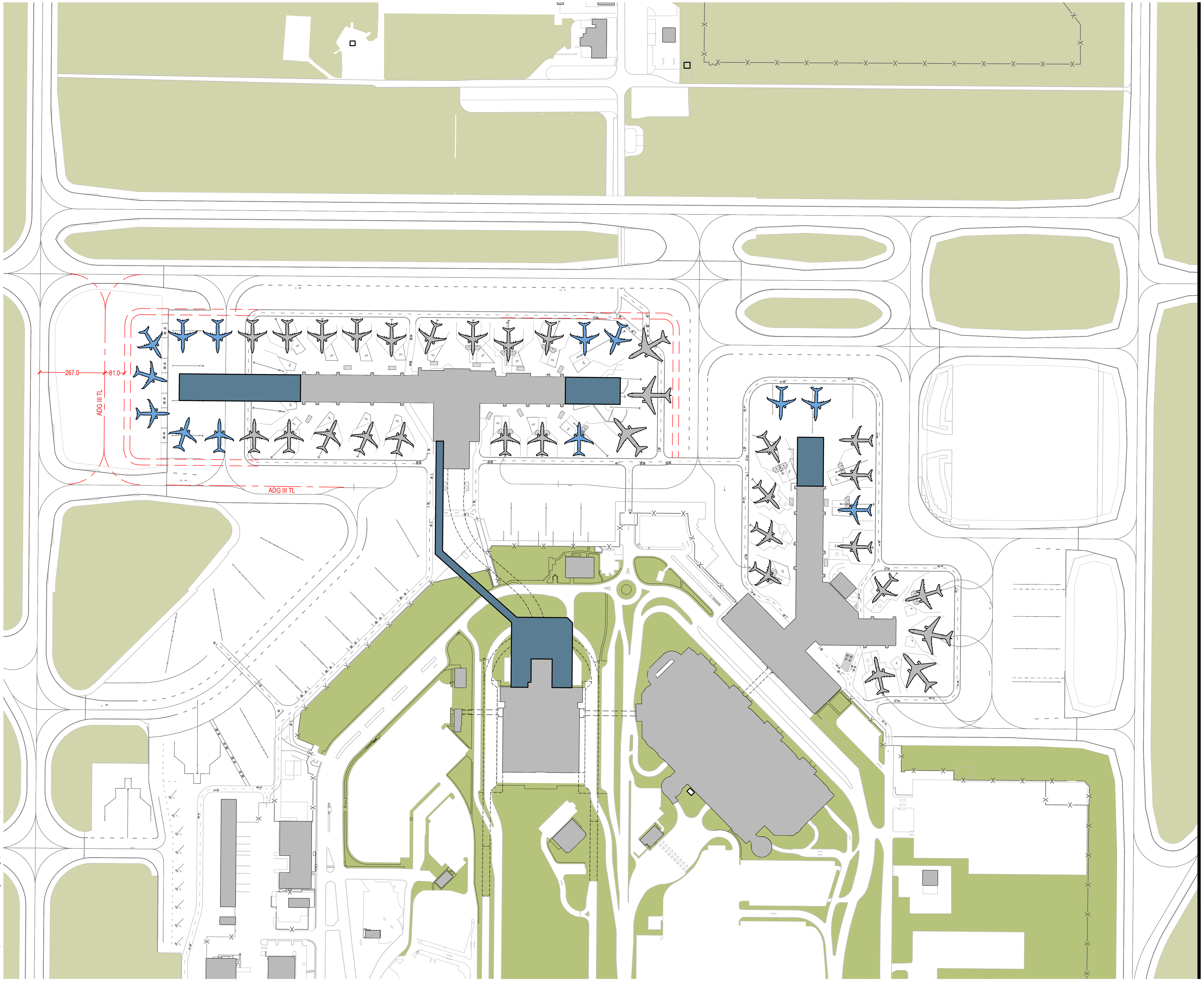

File: Gate Expansion Alternatives 13 gates.dwg (Tab: Alternative 1)

LEGEND

- AIRPORT PROPERTY LINE
- NEW AIRCRAFT GATES
- EXISTING AIRCRAFT GATES
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE
- FUTURE CONCOURSE EXPANSION
- EXISTING BUILDINGS
- NEW VEHICLE SERVICE ROAD
- NEW TAXILANE CENTERLINE

Gate A13 at Terminal A will be added back to the Terminal in 2021 as part of the jet bridge replacement program; all equipment paid for. In this analysis, it is considered one of the future 13 gates.

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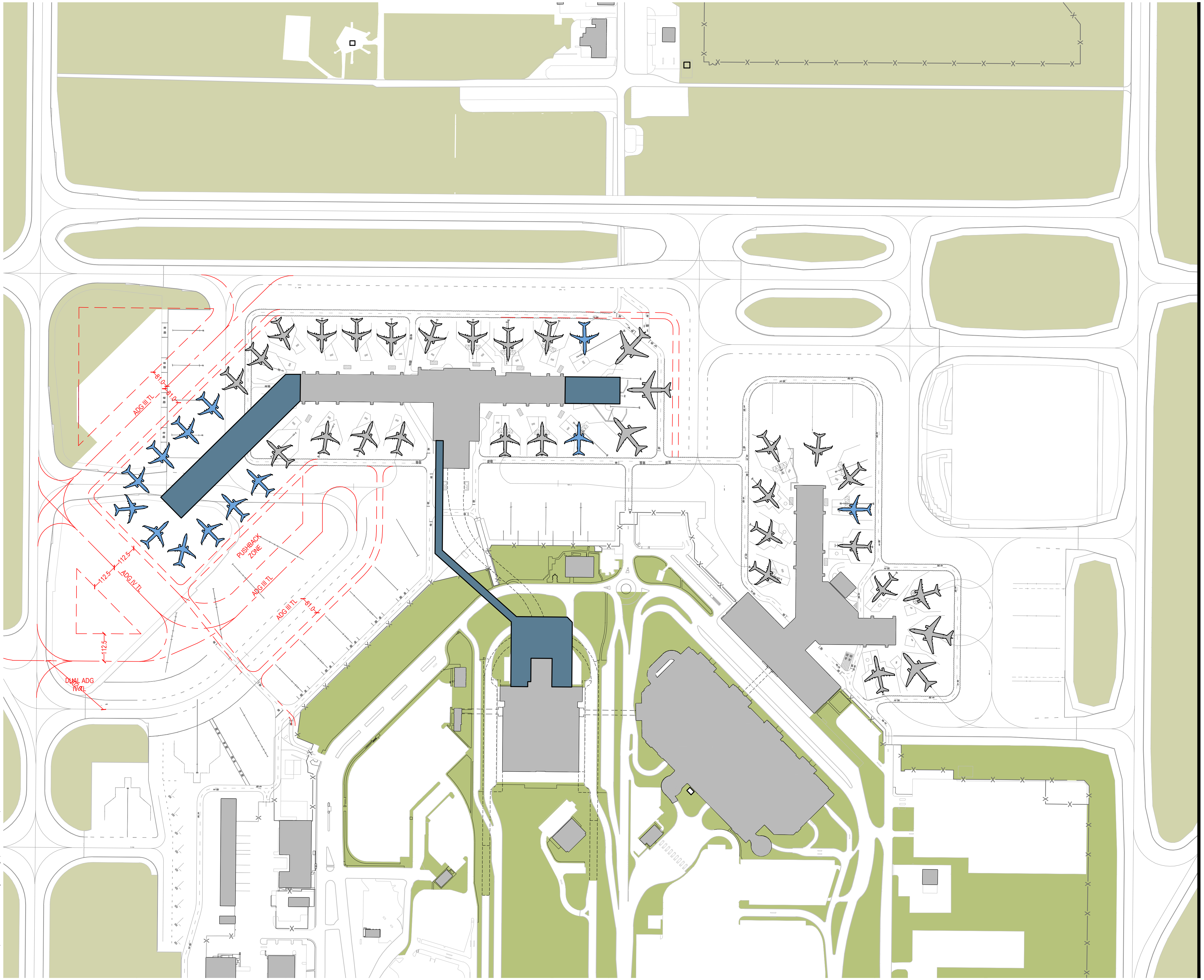
GRAPHIC SCALE IN FEET

FIGURE 4-2

ALTERNATIVE 1 - 13 GATES

Sacramento International Airport Master Plan
July 2020



LEGEND

- Airport Property Line
- NEW AIRCRAFT GATES
- EXISTING AIRCRAFT GATES
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE
- FUTURE CONCOURSE EXPANSION
- EXISTING BUILDINGS
- NEW VEHICLE SERVICE ROAD
- NEW TAXILANE CENTERLINE

Gate A13 at Terminal A will be added back to the Terminal in 2021 as part of the jet bridge replacement program; all equipment paid for. In this analysis, it is considered one of the future 13 gates.

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FIGURE 4-3

ALTERNATIVE 2 - 13 GATES

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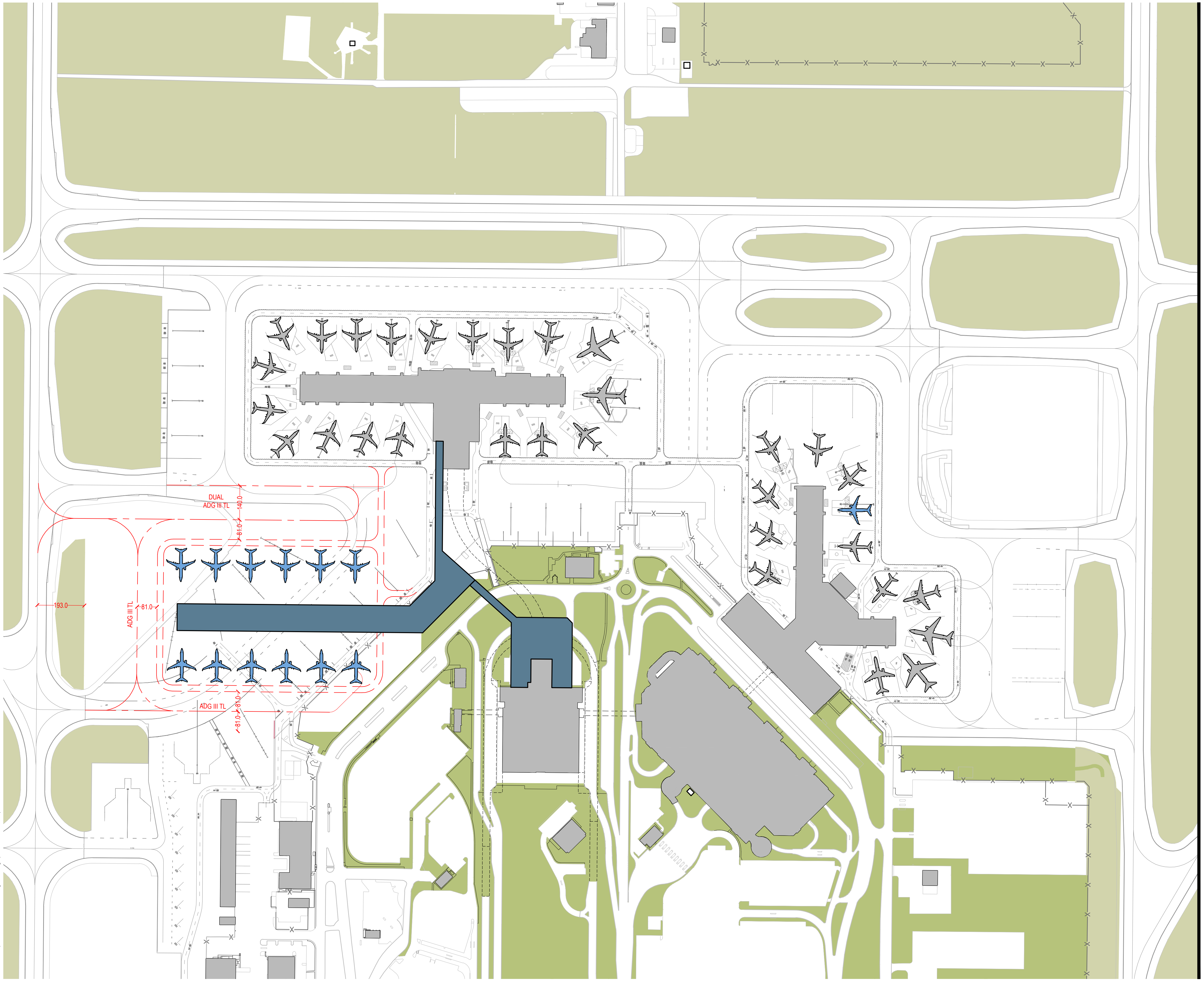
July 2020

File: Gate Expansion Alternatives 13 gates.dwg (Tab: Alternative 2)



File: Gate Expansion Alternatives 13 gates.dwg (Tab: Alternative 3)

LEGEND

- Airport Property Line
- NEW AIRCRAFT GATES
- EXISTING AIRCRAFT GATES
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE
- FUTURE CONCOURSE EXPANSION
- EXISTING BUILDINGS
- NEW VEHICLE SERVICE ROAD
- NEW TAXILANE CENTERLINE

Gate A13 at Terminal A will be added back to the Terminal in 2021 as part of the jet bridge replacement program; all equipment paid for. In this analysis, it is considered one of the future 13 gates.

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FIGURE 4-4

ALTERNATIVE 3 - 13 GATES

Sacramento International Airport Master Plan
July 2020

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4.3.2 QUALITATIVE ASSESSMENT

With input from SCDA staff, each of the terminal expansion alternatives were assessed based on their relative merits and disadvantages. The assessment is summarized in Table 4-3.

Table 4-3 Assessment of Terminal Expansion Options

Alternative	Pros	Cons
13 Gates Alternative 1	• Maintains most Concourse B RON parking • Utilizes existing apron geometry • Only one gate at Terminal A will become inoperable during construction. • Offers flexibility to focus phased expansion at either concourse • Consolidated and expanded Terminal B landside SSCP to meet demand • New passenger walkway for APM redundancy between Terminal B airside and landside	• Increases terminal activity on physically constrained Terminal A facilities • Terminal A loses 3 RON positions • Even if phased, a minimum of 2 gates will be inoperable during construction, and 4 RON positions are lost at Concourse B • Requires construction of new SSCP
13 Gates Alternative 2	• Focuses expansion on single concourse with flexibility to expand on either end • Can add 4 RON spots to replace those lost to expansion • Dual taxilane system with pushback zones • Consolidated and expanded Terminal B landside SSCP to meet demand • New passenger walkway for APM redundancy between Terminal B airside and landside	• Increases walking distances in Concourse B • Utilizes existing constrained SSCP area at Terminal B • Even if phased, a minimum of 2 and a maximum of 3 gates will be inoperable during construction • 8 RON positions are lost at Concourse B • Requires construction of new SSCP
13 Gates Alternative 3	• Dual taxilane system • Provides flexibility for phasing • Gate expansion can focus on new, Concourse C, without impact to any existing gates • New concourse space allows concessions program enhancement • Consolidated and expanded Terminal B landside SSCP to meet demand • New passenger walkway for APM redundancy between Terminal B airside and landside	• 10 RON positions lost • Requires construction of new SSCP • Reduces aircraft compatibility on existing cargo ramp • Construction of a new concourse and terminal facilities will require most capital costs.

Source: Sacramento County Department of Airports, 2020

4.3.3 TERMINAL GATING RECOMMENDATION

The preferred terminal alternative should be phased to accommodate conservative demand with the ability to expand to accommodate more aggressive demand should other factors come into play by PAL 4, such as new airline entrants, additional international service, or growth beyond the forecast.

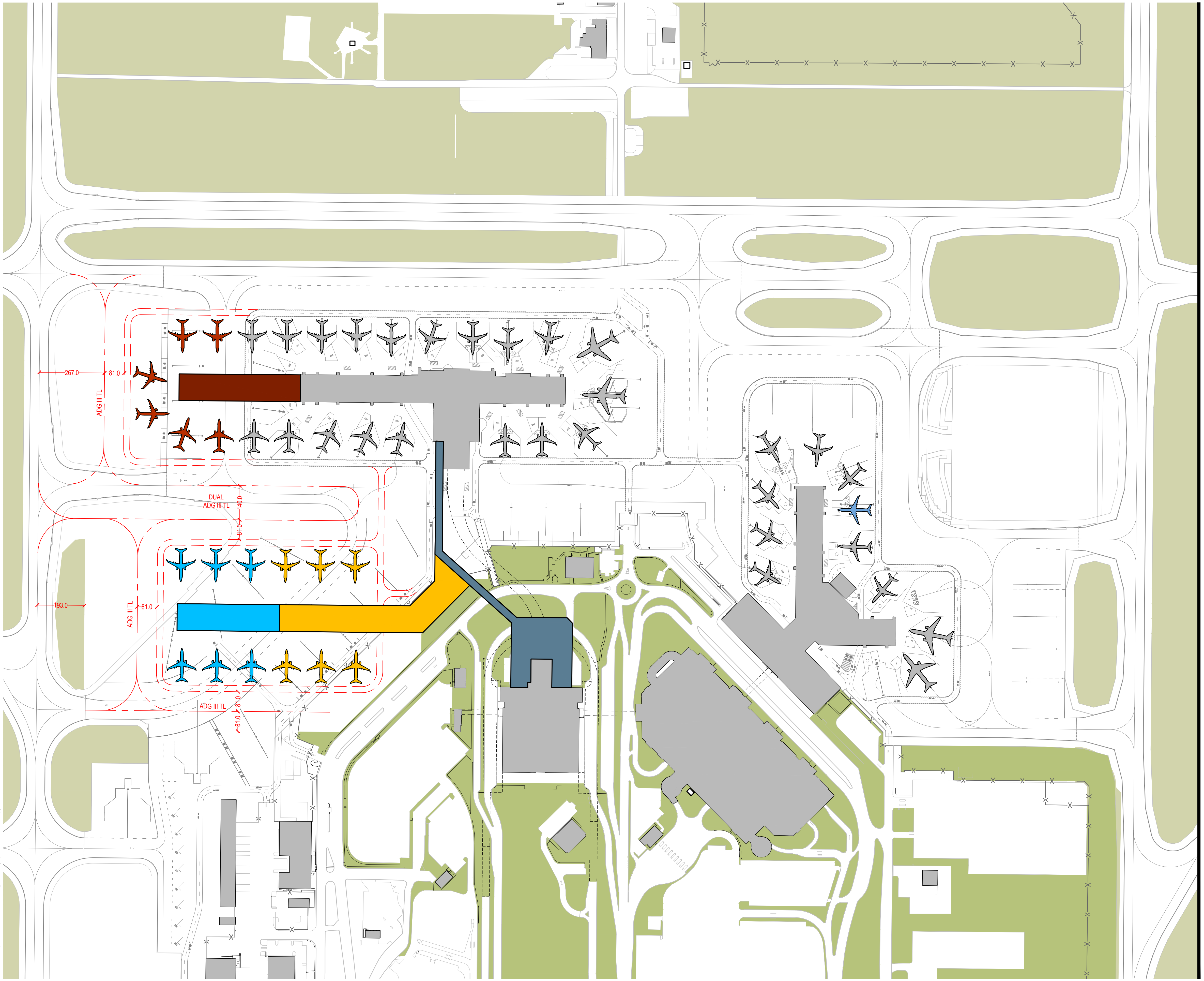
Due to the physical constraints associated with Terminal A, along with the age of the facility, it is recommended that gate expansion be focused at Terminal B. Alternative 3 provides the most flexibility for phasing construction at Terminal B without impacting existing gates, and accommodates both near-term terminal expansion needs as well as the ultimate PAL 4 development.

To preserve gate expansion and phasing flexibility, optional phasing for Alternative 3 was developed and is shown on Figure 4-5. In this variation, an initial six-gate expansion is constructed on the west end of Concourse B with additional expansion accommodated at a new Concourse C, which can accommodate up to 12 gates when demand warrants the additional gate capacity.

Alternative 3 includes moving walkways to enable more efficient passenger flow within the Terminal B complex and a new consolidated SSCP to enable more effective passenger processing. An Americans with Disabilities Act (ADA) compliant, protected from the elements and with no passenger access to the airport operations area (AOA) will ensure passengers have an alternate means of moving between existing Concourse B and Terminal B, and a future Concourse C. Moving walkways and escalators within this connector will provide a level of service beyond the existing infrastructure and will ensure airside security.

Alternative 3 also includes updated holdrooms, a central concourse circulation zone, strategically placed concession areas, restrooms, and building support spaces create an improved passenger experience. Dual taxilanes accessing new gates will ensure effective access to airfield facilities. Phasing flexibility minimizes impacts to existing operations.

Near-term terminal expansion design and phasing will rely on further analyses and collaboration with airline partners for conclusive justification. Additional analysis is recommended to further refine ramp charts and explore opportunities for efficiencies by either reallocating airlines between the terminals or exploring the addition of common-use gates.



LEGEND

- Airport Property Line
- NEW AIRCRAFT GATES
- EXISTING AIRCRAFT GATES
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE
- FUTURE CONCOURSE EXPANSION
- EXISTING BUILDINGS
- NEW VEHICLE SERVICE ROAD
- NEW TAXILANE CENTERLINE
- PHASING OPTION 1
- PHASING OPTION 2
- PHASING OPTION 3*

*Phasing Option 3 cannot be constructed unless Phasing Option 2 has been constructed.

Phasing Option Construction Order can be:
- 1,2,3
- 2,3,1
- 2,1,3

Gate A13 at Terminal A will be added back to the Terminal in 2021 as part of the jet bridge replacement program; all equipment paid for. In this analysis, it is considered one of the future 13 gates.

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GRAPHIC SCALE IN FEET

FIGURE 4-5

ALTERNATIVE 3 - 13 GATES WITH PHASING OPTIONS

Sacramento International Airport Master Plan
July 2020

File: Gate Expansion Alternatives 13 gates.dwg (Tab: Alternative 3p)

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4.3.4 AIRCRAFT REMAIN OVERNIGHT PARKING

Additional RON parking needs were identified in the DDFS method gating analysis (presented in *Section 3 – Facility Requirements)*. As per that analysis, in Terminal A, up to six additional RON positions are needed through PAL 4. In Terminal B, up to three additional RON positions are needed through PAL 4, for a total of up to nine additional RON positions at the Airport. It is important to note that RON positions are linked to the addition of aircraft gates, since aircraft can park at remote positions while others can remain overnight at new gates. For this reason, no RON alternatives were developed on the west side of the Airport, as all the gating alternatives impact the availability of RON positions. On the east side, the gating alternatives do not affect the ability to add RON positions, therefore four RON parking alternative locations are evaluated in this area (Figure 4-6). For this analysis, all RON parking alternatives accommodate Aircraft Design Group (ADG)-III aircraft. ADG-III aircraft account for 83% of the fleet mix at SMF and are anticipated to account for 85% of the fleet mix in future years. A summary of each RON parking alternative is provided in Table 4-4.

Table 4-4 RON Parking Alternatives

Alternative	ADG-III Aircraft Accommodated	New Impervious Surface
Alternative A1	7	51,500
Alternative A2	8	42,500
Alternative A3	4	25,500
Alternative A4	13	67,000

Source: Sacramento County Department of Airports, 2020

4.3.4.1 Alternative A1

This alternative is located south of the existing Terminal A apron in the space currently occupied by an employee parking lot.

PROS:

- Existing electrical vault remains in-place
- Entirely new apron space; aircraft do not need to be pushed back onto active taxiways

CONS:

- Construction of a blast wall along the north perimeter of the adjacent solar farm is recommended with this option
- Provides only up to seven ADG-III aircraft parking positions

4.3.4.2 Alternative A2

This alternative is located within the island between Taxiway C1 and Taxiway C2

PROS:

- Allows for towless entry and push-back, or tow-out options with central taxilane between aircraft
- Provides up to eight ADG-III aircraft parking positions
- Currently shown on the ALP as future apron area for RON parking

CONS:

- Non-movement boundary on Taxiway C1 should be moved to Taxiway D object free area (OFA) boundary to avoid aircraft on the north side of the island from being pushed onto an active taxiway

4.3.4.3 Alternative A3

This alternative is located within the island between Taxiway W and Taxiway C1.

PROS:

- Allows for tow-less entry and push-back, or tow-out options with central taxilane between aircraft

CONS:

- Recommended that the non-movement boundary on Taxiway C1 is moved to the OFA boundary of Taxiway D to avoid aircraft parked on the north side of the island from being pushed back onto an active taxiway; alternatively, aircraft may exit under their own power onto Taxiway W
- Provides only up to four ADG-III aircraft parking positions

4.3.4.4 Alternative A4

This alternative is located along the north edge of the Taxiway W pavement, south of the solar farm.

PROS:

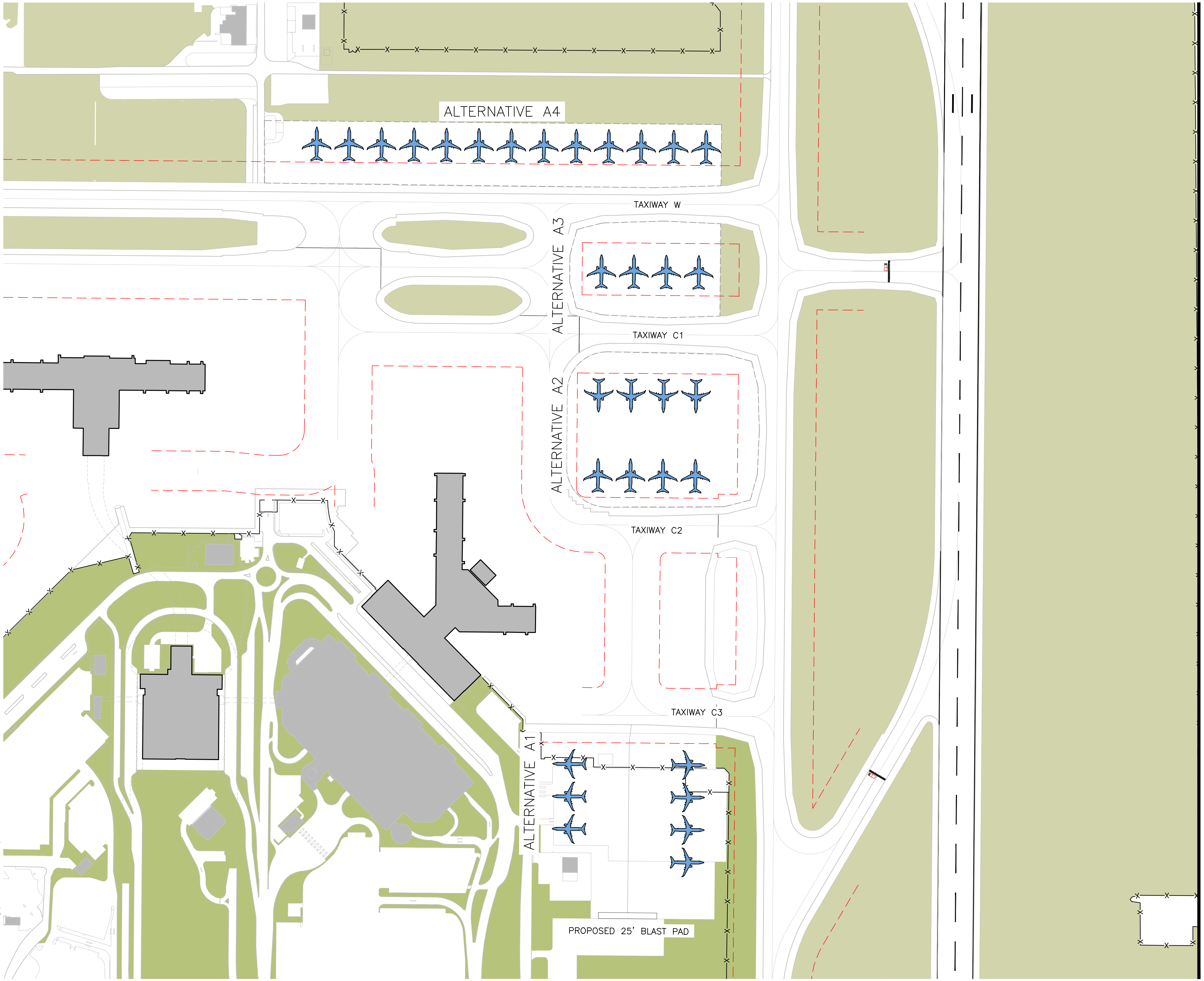
- Provides for the most lead-in lines in one single area as compared to the other three options (up to 13 ADG-III parking positions)

CONS:

- Aircraft will need to be pushed back onto an active taxiway
- This configuration is in conflict with future Taxiway V construction

4.3.4.5 Remain Overnight Parking Recommendation

Each of the RON parking alternatives are viable options for future RON aircraft parking. Alternative A2 has previously been analyzed for its operational and parking benefits and is currently shown on the ALP as future apron area for RON parking. Alterative A2 increases RON by eight positions and for the majority of the terminal expansion options, the additional positions provided in Alternative A2 will accommodate demand through PAL 4. Alternative A2 is alternative recommended by the SCDA.



LEGEND

- AIRPORT PROPERTY LINE
- TAXIWAY OBJECT FREE AREA
- NEW REMAIN OVERNIGHT POSITIONS
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE

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File: RON Alternatives.dwg (Tab: TA RON Alternatives)

FIGURE 4-6

RON PARKING ALTERNATIVES

Sacramento International Airport Master Plan
July 2020

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4.4 GROUND TRANSPORTATION AND PARKING

In analyzing the ground transportation and parking requirements for SMF, models were created to determine public parking (close-in vs. remote), rental car, and ground access needs as described in *Section 3 - Facility Requirements*. Requirements were then compared to existing facilities, and alternatives were developed where gaps appeared. Alternatives scenarios and/or recommendations have been developed for PAL 1 through PAL 4 to address deficiencies in the following areas:

- Public parking facilities (close-in and remote)
- Rental car facilities
- Airport roadways
- Curbside/ground transportation center

4.4.1 PUBLIC PARKING ALTERNATIVE SITES

Public parking requirements increase from approximately 16,400 spaces under baseline conditions to nearly 25,000 spaces by PAL 4. This is driven largely by the need for the Airport to accommodate all public parking customers in on-airport facilities. A variety of public parking sites and products are considered, as shown in Figure 4-7.

4.4.1.1 Close-In Public Parking Alternatives

Close-in parking facilities are defined as being within a 1,500-foot “walkable” distance of the passenger terminals. The shape of the existing SMF terminals, supporting airfield, and existing landside assets limits new close-in parking facilities to specific locations, each shown in Figure 4-7. In some cases, new parking revenue controls will have to be established.

- Public Parking facility #18 replaces the Hourly B public parking lot with an Hourly B garage, which could be six or seven levels depending on airport traffic control tower (ATCT) line-of-sight constraints, and could provide at least 3,400 parking spaces. The facility can be built in phases with southward expansions to align capital investment with parking demand.
- Public Parking facility #19 is an expansion of the Parking Garage B and would be constructed to the same height and grow the facility to approximately 5,100 spaces (similar size to Garage A).
- Facility #20 is a consolidated rental car (ConRAC) facility with an option to include public parking, described in more detail in *Section 4.4.2*. Approximately 3,640 public parking spaces could be constructed on the upper floor(s) of a two-or-four-level ConRAC facility, which would replace the lost daily lot spaces.
- Facility #25 is a 1,500-space expansion of the Terminal A garage to the southeast of the existing facility. Construction phasing to maintain operations within the facility will be required. This alternative needs to consider the age of the existing garage infrastructure and the footprint, which conflicts with potential ConRAC alternatives.

4.4.1.2 Remote Parking Alternatives

Remote parking facilities at the Airport require shuttle buses to provide customer connectivity between the parking facility and the passenger terminals. Approximately 55% of existing parking facilities at SMF are remote parking facilities. Expanding remote facilities will include an associated expansion of the shuttle service to access those facilities. It will also increase the amount of impervious surface cover, which will require analysis of stormwater runoff and potential mitigation. The following remote parking alternatives were considered, as shown in Figure 4-7:

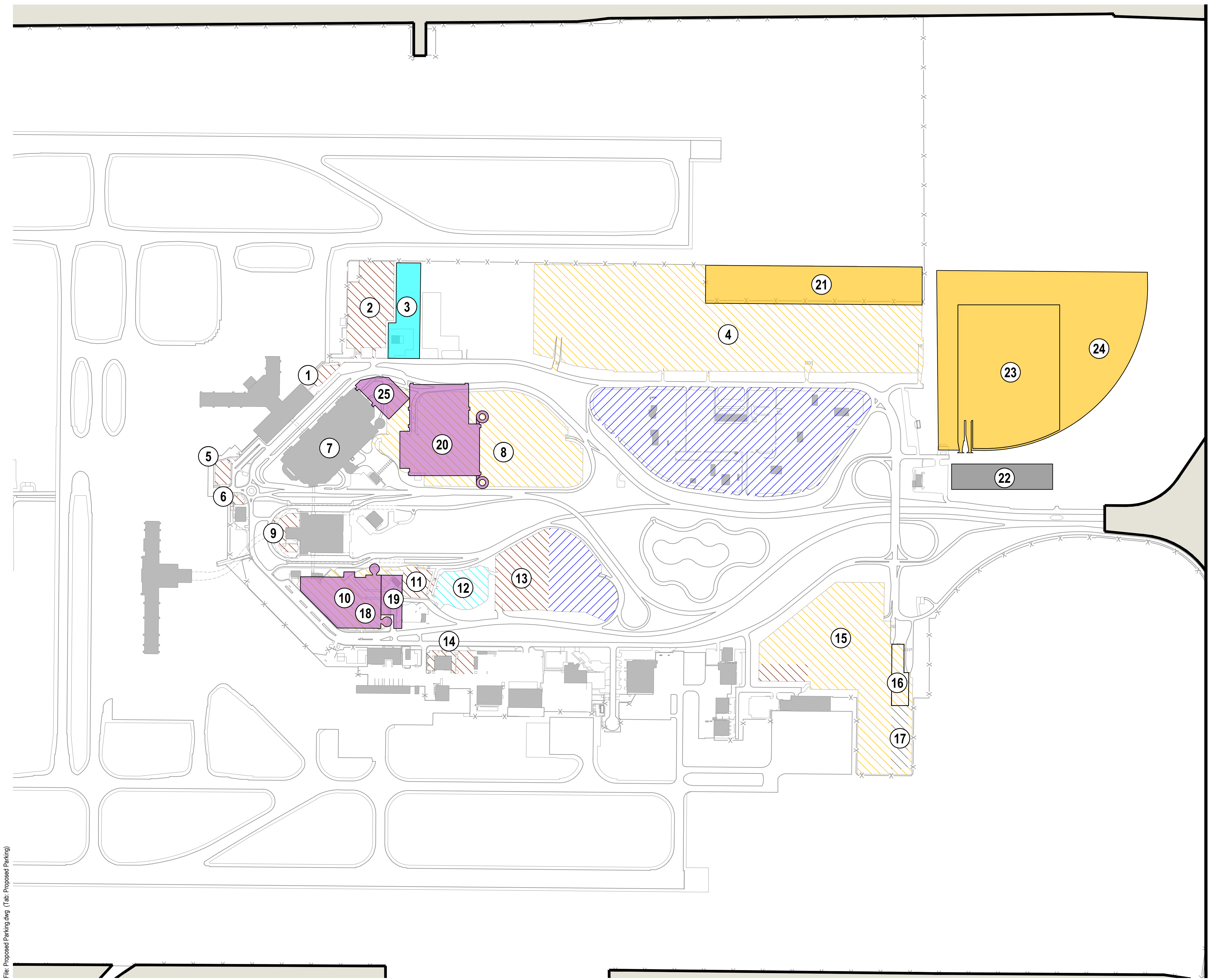
- Facility #23 is a new southward expansion of the existing East Economy Parking Lot. The 2,800-space parking facility is currently under design and will be served by the same shuttle bus as the existing East Economy Lot.
- Facility #21 is an eastward expansion of the East Economy Lot, which would provide approximately 1,800 new public parking spaces.
- Facility #24 is a potential future southward expansion of Economy Lot #23, which would provide an additional 3,700 public parking spaces.

4.4.1.3 Public Parking Assessment and Recommendation

Determining a preferred public parking alternative(s) relies on striking the right balance between 1) a higher capital cost, with higher revenue generating and level of service aspects of close-in parking facilities, and 2) a lower capital cost, with lower net revenue generating remote parking facilities.

To meet close-in demand and compensate for public parking spaces lost in the Daily Lot due to other preferred developments, the recommendation is to construct a garage (Public Parking facility #18 and #19) on the current Hourly B surface lot (Public Parking Facility #10) in either one or two phases based upon demand/capacity requirements. Additional remote surface parking (described in *Section 4.4.1.2*) should be constructed in phases to meet demand, but also to minimize operations and maintenance (O&M) costs associated with shuttle bus operations.

Some public parking projects are currently in various stages of development from planning to design. The Airport should continue to identify parking projects based on development timelines and costs that can be balanced with revenues as parking demand fluctuates with changing aviation demand and customer needs.



LEGEND

- Airport Property Line
- Buildings
- Off-Airport Property
- Public Parking - Surface / Future
- Public Parking - Structure / Future
- Employee Parking - Surface / Future
- Bus Parking / Future
- TNC / Taxi Facilities / Future
- Rent-A-Car Facilities / Future

PARKING FACILITY INDEX		SPACES
1	Employee Parking Lot (50)	50
2	Employee Parking Lot (51)	796
3	Bus Parking Lot	30
4	Economy Parking Lot (40-43)	6,374
5	Employee Parking Lot (32)	68
6	Employee Parking Lot (2)	16
7	Parking Garage	5,255
8	Daily A Parking Lot (20-21)	3,052
9	Employee Parking Lot (1)	40
10	Hourly B Parking Lot	618
11	Employee Parking Lot (5)	115
12	Bus Parking Lot (9)	3885
13	Employee Parking Lot (11 - North)	518
14	Employee Parking Lot (53)	113
15	West Economy Parking Lot (44)	1,794
16	Cell Phone Waiting Lot	147
17	TNC Parking Lot (45)	204
18	Terminal B Garage	3,400
19	Terminal B Garage Expansion	1,600
20	Parking on Rent-A-Car Facility	2,000
21	East Economy Lot Expansion	1,767
22	New Cell Phone Lot	450
23	South Economy Lot	2,848
24	South Economy Lot Expansion	3,687
25	Existing Parking Garage Expansion	1,500

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GRAPHIC SCALE IN FEET

FIGURE 4-7

PROPOSED PARKING EXPANSION SITES

Sacramento International Airport Master Plan
July 2020

File: Proposed Parking.dwg (Tab: Proposed Parking)

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4.4.2 RENTAL CAR FACILITY ALTERNATIVES

The existing rental car site at SMF has been operating in a constrained environment for some time and has an inefficient layout with deficient security for modern car rental activities. All planning for rental car operations has been in an effort to construct a new consolidated rental car facility. Once this happens, the existing car rental site and facilities can be repurposed for rental car maintenance, some other airport function, or a combination of the two.

4.4.2.1 Alternatives Development Process

Site selection for rental car (RAC) facility expansion began with three sites on the west, south, and southeast side of Terminal B. None of these sites were sufficiently sized to accommodate a surface RAC facility, so a ConRAC garage was explored. All footprints identified for a ConRAC were also walkable, to preserve higher-value real estate currently being used for public parking, and therefore, the Airport supported and preferred development of a ConRAC garage

Preliminary massing and blocking was considered for three sites. The site west of Terminal B was discarded due to its longer walking distance to Terminal A, difficulty in connecting to the existing RAC facility (for service sites), and preferred site use as a public parking garage to balance the parking demand between the terminals. The site directly south of Terminal B was discarded because it was inadequately sized to accommodate both ready/return and quick turnaround activities and due to its proximity to the ATCT. The age of the existing Terminal A parking garage warranted a structural evaluation and consideration of an alternative that demolished the existing garage and replaced it with a combined ConRAC/public parking facility. Ultimately, the various options were narrowed down to three ConRAC alternatives as shown on Figure 4-8, Figure 4-9, and Figure 4-10.

Many ConRAC facilities in the United States are constructed with three levels of ready/return parking corresponding to each of the major RAC families (Hertz/Dollar/Thrifty, Enterprise Holdings, and the Avis Budget Group). However, RAC market share at SMF is approximately 45% Enterprise Holdings and 55% for others. Therefore, two-level and four-level ConRAC alternatives were explored to allow for better optimization of space inside the facility.

Space required for rental car operations at the Airport is divided into several categories including ready/return space, quick turnaround area (QTA), and additional vehicle storage space. Following discussions with the rental car companies at SMF, the PAL 3 requirement also accommodates PAL 4 RAC activity with flexible operations and strikes the right balance of near-term facility needs with long-term operational flexibility. The total PAL 3 requirement is approximately 2.6 million square feet, or 59 acres of footprint. Roughly half of the space is needed for ready/return and QTAs while the other half is needed for vehicle storage. A customer service building (CSB), approximately 22,000 square feet, is required by PAL 4 as well. The existing space allocated to RAC operations is approximately 1.2 million square feet. Existing rental car companies support RAC facility expansion if the customer facing elements can be located within a 1,500-foot "walkable" distance of the passenger terminal buildings.

4.4.2.2 ConRAC Alternative 1

ConRAC Alternative 1, shown in Figure 4-8, features a two-level ready/return garage with a QTA in a separate two-level structure adjacent to, and on the south side, of the existing parking garage. The QTA is shown as a separate garage structure to meet the local fire code, since it contains vehicle fueling infrastructure. The ready/return garage has a floorplate of approximately 440,000 square feet and provides space for approximately 635 ready spaces and 410 return spaces on each level. The ConRAC facility connects to the passenger terminals via new elevated walkways so that customers have an indoor, conditioned space. A customer service building is provided on the north side of the ready/return garage.

The footprint of ConRAC Alternative 1 displaces nearly the entire daily public parking lot. As a result, the ConRAC facility will need to include additional structured parking above the ready/return garage. An additional level of parking could be included for rental car storage, which would help the RACs operate the facility at maximum efficiency. Finally, a roadway overpass is shown over the Terminal A entrance roadway, connecting from the south side of the QTA to the existing RAC area, which would continue to serve as RAC vehicle storage and heavy maintenance.

4.4.2.3 ConRAC Alternative 2

ConRAC Alternative 2, shown in Figure 4-9, is a four-level ready/return garage, with approximately half the footprint of Alternative 1. The QTA is two levels with a level of RAC storage parking above the fuel and wash facilities. Other elements of ConRAC Alterative 2 are similar to Alternative 1 including the connecting walkways and customer service building.

Because the footprint of the ready/return garage in Alternative 2 is much smaller than in Alternative 1, the impact to the daily public parking lot is reduced. Replacement parking could be accommodated in a new Terminal B garage or in new remote surface parking.

4.4.2.4 ConRAC Alternative 3

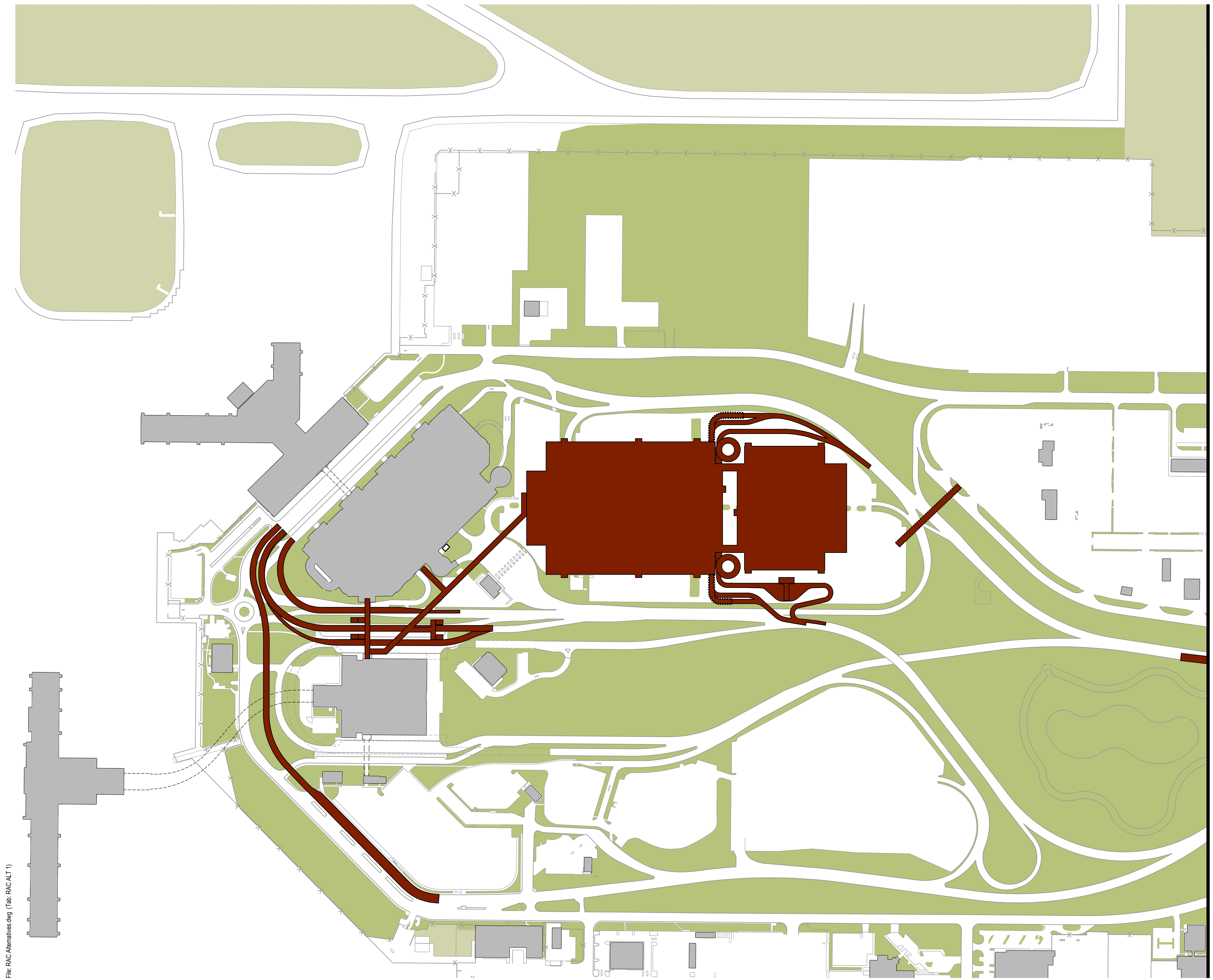
Figure 4-10 shows a potential entire replacement of the existing Terminal A parking garage with a combined ConRAC and public parking facility. The new replacement facility is ideally located adjacent to both Terminal A and Terminal B, minimizing walking distances for both RAC and public parking customers.

The existing garage was constructed in 2001 and is not quite 20 years old at the time of this Master Plan Update; or, roughly halfway through its potential useful life. A March 2020 structural condition assessment by the Watry Design Group determined that the existing garage is in good condition and can last many more years with appropriate preventative maintenance. The cost of demolishing and replacing an asset in good condition does not justify further consideration of this alternative.

4.4.2.5 ConRAC Assessment and Recommendation

Key evaluation criteria to determine whether ConRAC Alternative 1 or 2 is preferred include cost, constructability, and RAC stakeholder preference. The decision is also influenced by the preferred locations and project timelines for public parking facilities since both alternatives impact public parking.

ConRAC Alternative 2 impacts less public parking due to its smaller footprint, and offers flexibility in being constructed as either a two-level or four-level facility based on anticipated demand. Replacement public parking within the ConRAC can also be included as part of Alternative 2; therefore, this is the preferred alternative.



LEGEND

- AIRPORT PROPERTY LINE
- ALTERNATIVE 1
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE

N

0 200' 400'

GRAPHIC SCALE IN FEET

FIGURE 4-8

CONRAC ALTERNATIVE 1

Sacramento International Airport Master Plan
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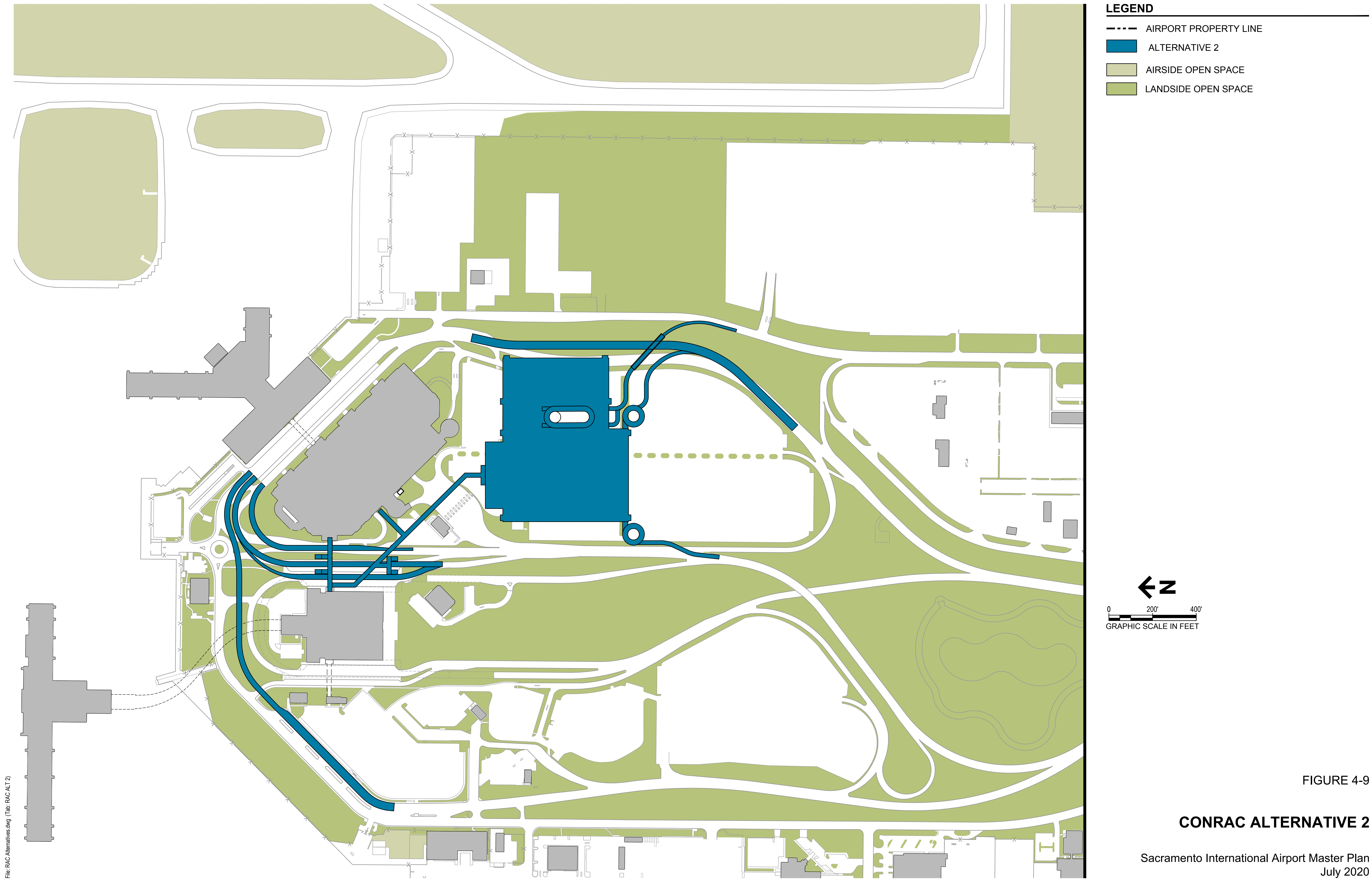
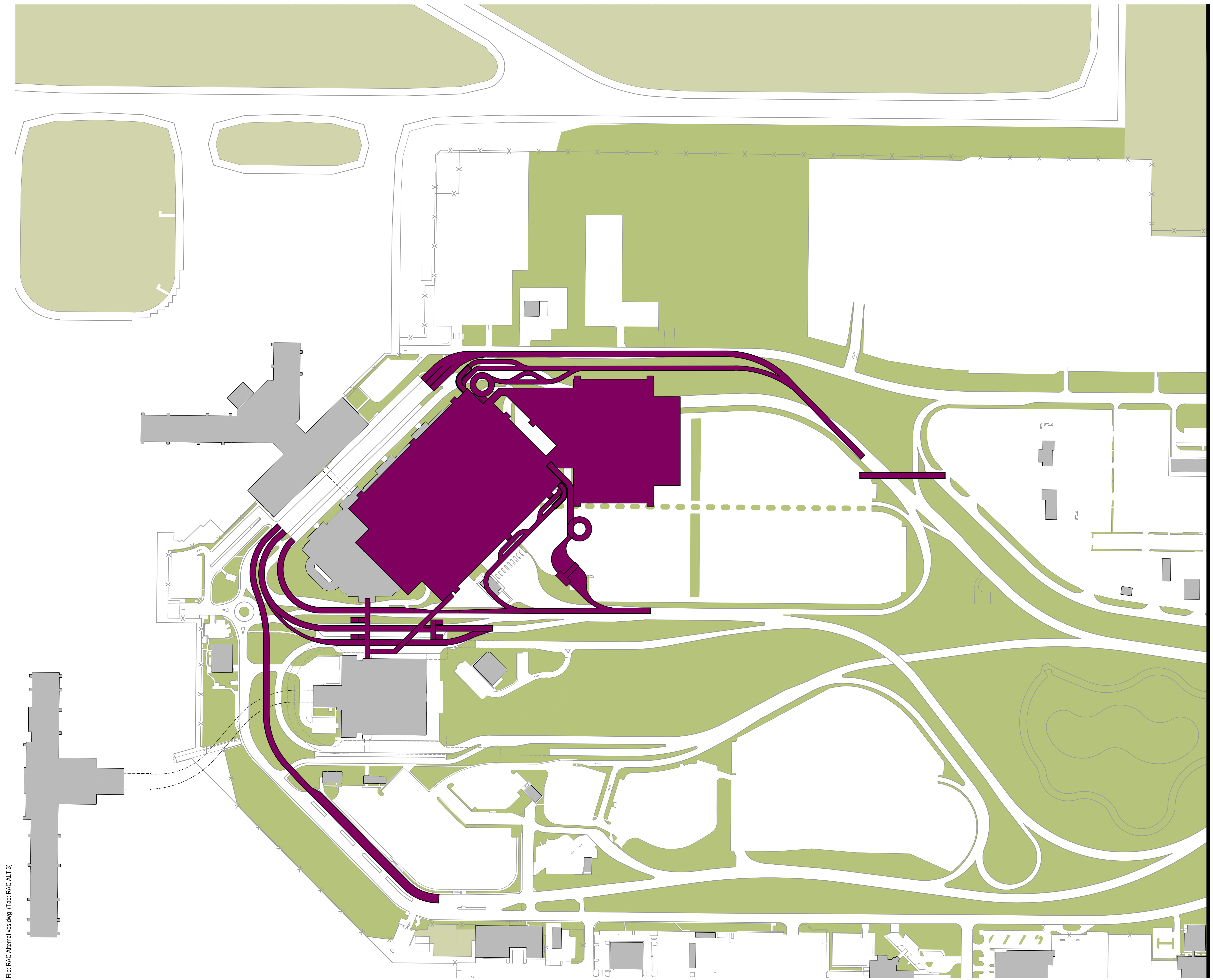


FIGURE 4-9

CONRAC ALTERNATIVE 2



LEGEND

- AIRPORT PROPERTY LINE
- ALTERNATIVE 3
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE

N

0 200' 400'
GRAPHIC SCALE IN FEET

FIGURE 4-10

CONRAC ALTERNATIVE 3

Sacramento International Airport Master Plan
July 2020

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4.4.3 AIRPORT ROADWAY IMPROVEMENTS

Roadway demand nearly reaches capacity on Airport Boulevard under baseline conditions. As new close-in parking and rental car facilities are constructed to accommodate demand, new roadway capacity will be needed to help passengers enter and exit the Airport. Currently two projects are underway to alleviate near-term congestion: 1) the Interstate-5 interchange improvements, and 2) the Elkhorn Boulevard extension.

4.4.3.1 Interstate-5 Interchange Improvements

The California Department of Transportation (Caltrans) has embarked on a project to install ramp meters along ramps exiting Airport Boulevard onto northbound and southbound Interstate-5. Capacity from the installation of additional lanes (completion is dependent upon Caltrans schedule) should be compared to the baseline and projected peak-hour roadway volumes in this Master Plan Update to re-examine throughput and determine adequacy. Any capacity improvements to the interchange will be at the Airport's cost and discretion.

4.4.3.2 Elkhorn Boulevard Extension

New roadway access via an Elkhorn Boulevard extension is currently under design. This new roadway has the potential to alleviate congestion at the existing interchange with Interstate-5 and Airport Boulevard by providing a new access point for passengers entering and leaving the Airport to the north and east, particularly via California SR-99.

4.4.3.3 Future Airport Roadway Improvements

Though some capacity issues currently appear on the inbound roadways in future PALs, several of the parking and ground transportation alternatives will require improvements to those roadways or will have to utilize other existing on-airport roadways that are currently under-utilized or have additional capacity. One example of this is the Terminal B bypass exit, which could alleviate congestion at the traffic circle and adjacent to Terminal B. This is shown as an enabling project to the Ground Transportation Center (GTC), discussed in *Section 4.4.4*.

A separate traffic study is underway at the time of this Master Plan Update to review roadway connectivity with on-airport traffic generators such as curbside, parking, and rental car facilities, and to ensure that safety and capacity are addressed at each of the on-airport roadway intersections.

4.4.4 CURBSIDES AND GROUND TRANSPORTATION CENTER

The total curbside capacity at the Airport is adequate through PAL 4. If operations are consolidated or focused more at Terminal B, then the roadway capacity on the upper level of Terminal B, as well as that curb length, will become more congested and will need to be re-evaluated. Consideration should be given to providing additional lanes that connect the east and west sides of Terminal B. Alternative access should also be provided to one of the terminal curbs to unlink the two sides and eliminate the need for passengers on both sides. Building additional curb capacity, or optimizing curbside space by pickup vs. drop-off, and by commercial vs. private vehicles, will extend the life of the existing curbs at both terminals, but it may also trigger the need for new curbside roadways.

One alternative within the terminal core that will drive efficiency is construction of a new, consolidated GTC to replace the existing GTC facilities at Terminal A and Terminal B. Figure 4-11 shows the potential configuration of a consolidated GTC located between Terminal B and the existing Terminal A garage. The facility would consist of two or three roadways parallel to the existing Terminal B curbside roadways.

Commercial vehicle activities such as shuttles, taxis, limos, transportation-chartered parties, and transportation network companies (TNCs) would each have space allocated on the curbside roadways of the GTC. Elevated walkways would connect Terminal A and Terminal B to the GTC. This consolidated GTC could be used for both passenger pickup and drop-off activities, which would reduce congestion on the existing curbside roadway infrastructure. One key enabling project required to create physical space for the GTC in the proposed location is the re-routing of the Terminal A exit roadway counterclockwise, around the north side of Terminal B, south of the roundabout and under the APM guideway. The roadway would rejoin the Airport exit roadway on the west side of the existing Hourly B lot site.

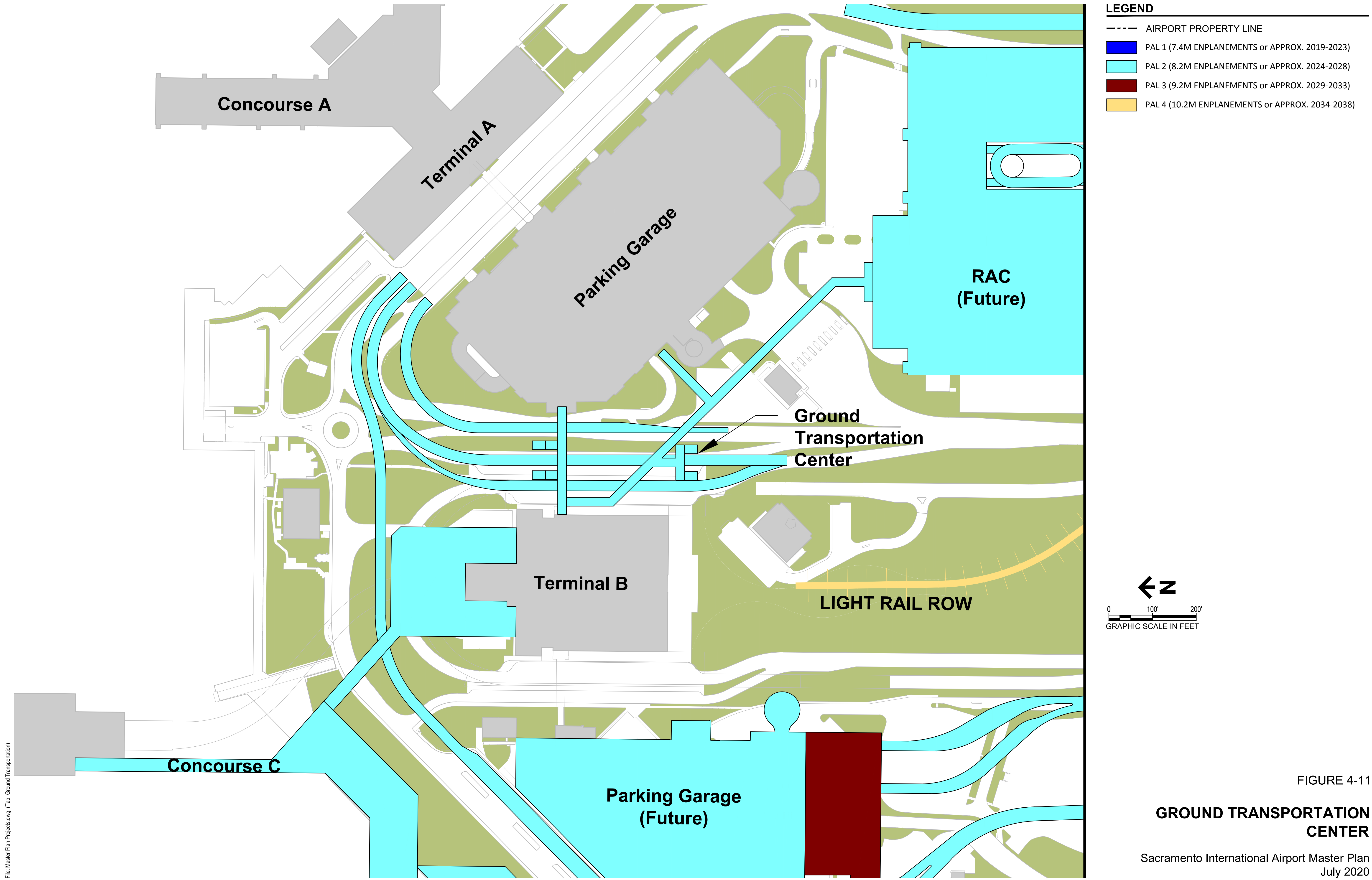

FIGURE 4-11

GROUND TRANSPORTATION CENTER

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4.5 SUPPORT FACILITIES

This section describes the site assessment completed for air cargo, general aviation, airport maintenance, and commercial development at the Airport. Based on the assessment, it was concluded that (1) most support facilities at the Airport are suitably located, and (2) the site assessment is useful as a land use management tool as opportunities for new Airport development arise. Commercial development opportunities that compete with space needs for on-Airport functions will continue to be considered on a case-by-case basis.

The objective of this site assessment is to identify locations that best meet the criteria of the specific support facilities and to provide the Airport with decision-making information for long-term land use planning and allocation of space.

The following support facilities are not part of this analysis:

- ARFF is excluded from this analysis because a new facility that meets demand through PAL 4 is planned for construction in 2020.
- Fuel storage is excluded from this analysis because the existing fuel farm is relatively new and has the capacity to accommodate fuel storage requirements through the PAL 4 planning period.
- Office space for airport administration needs will be assessed during a more focused terminal study.
- Catering facility requirements are not expected to outgrow the existing facility size throughout the planning period. Once the existing catering facility nears the end of its useful life, SCDA staff will re-assess demand, needs, and alternative locations.
- Neither the FAA Flight Inspection Field Office (FIFO) nor the United States Post Office are expected to require additional facilities during the planning period. As these facilities reach the end of their useful lives, SCDA staff will re-assess demand, needs, and alternative locations.

4.5.1 SUPPORT FACILITIES SITES ASSESSED

Based on the existing land use at the Airport and input from SCDA staff, five broad study areas were identified (i.e., sites), located in different sections of the Airport, as shown on the key map provided in Figure 4-12. Specific locations of facilities within the sites that are suitable for development were also identified in the subsequent sections depending on the requirements identified in *Section 3 – Facility Requirements*.

Site 1: North Airfield Area - Located north of Taxiway W, this site currently houses the ARFF facilities, maintenance facilities, and temporary structures. A portion of this site will be used for the future ATCT. This site has non-public, gate-controlled access to Elverta Road, which can be used to access State Route 99 (CA-99).

Site 2: I-5 Interchange Area - Located south of Crossfield Drive, this site is largely undeveloped. Some areas close to the Runway 34R end have limited, SCDA-access only (Meister Road) and are mostly used by maintenance crews. The site currently does not have airfield access.

Site 3: Economy Lot Area - Located between Aviation Drive and Taxiway D, this site is primarily used as an economy parking lot. A portion of this site is used for the east solar farm, and the northern end is an employee parking lot. The site has good landside access. Direct airside access could be provided to this site.

Site 4: Remain Overnight Apron Area between Cargo Facilities and Concourse B - This site is currently used for cargo operations and RON parking. This site has airside access and landside access and is identified as a potential site for a future terminal concourse.

Site 5: West Airfield Area - Multiple buildings on this site are located between Taxiway A and Lindbergh Drive, and some have direct airfield access. These buildings currently house the all-cargo carriers, provisioning, catering, GA, the United States Postal Service (USPS), and the FAA FIFO.

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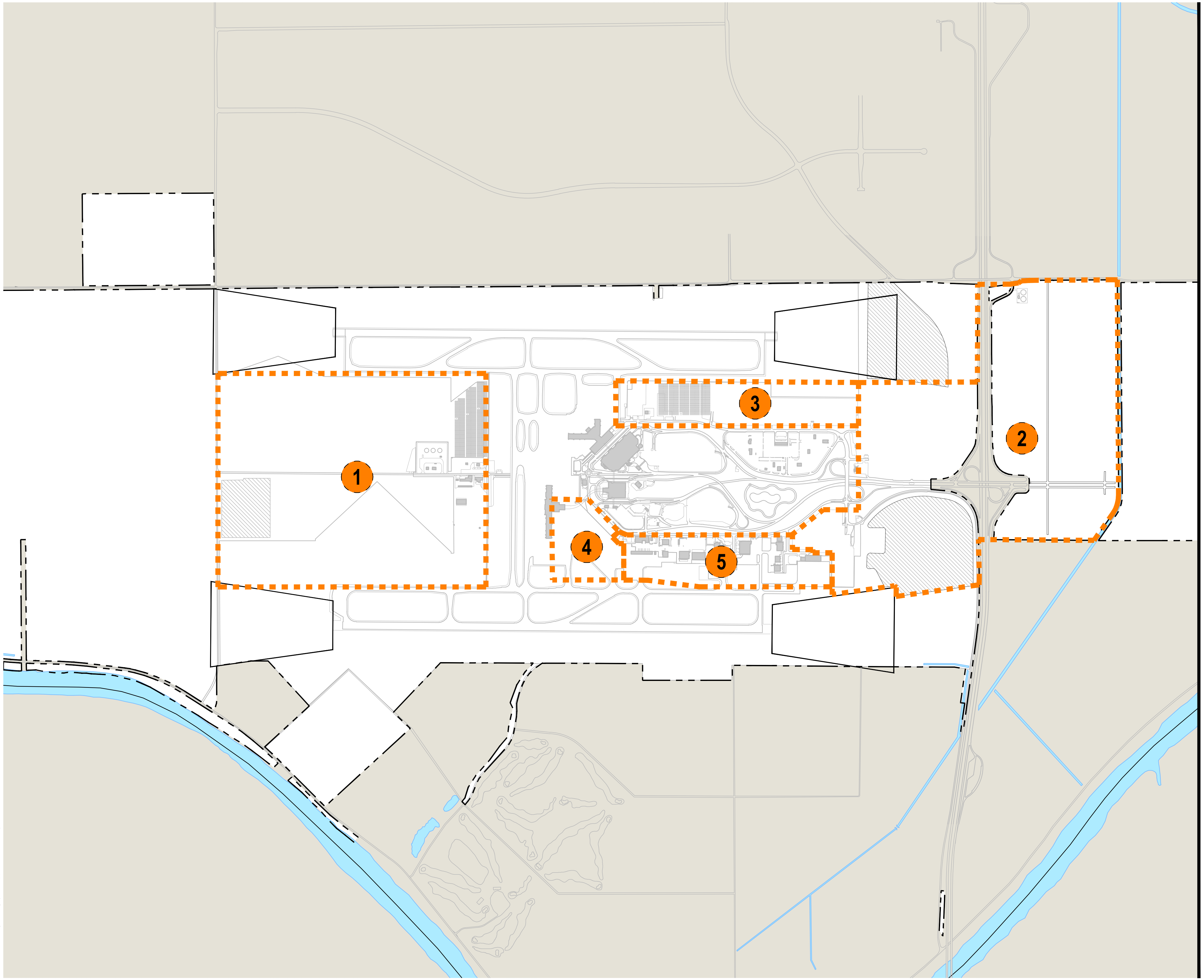

LEGEND

AIRPORT PROPERTY LINE

SUPPORT FACILITY AREAS

0 1000' 2000'
GRAPHIC SCALE IN FEET

FIGURE 4-12

SUPPORT FACILITIES SITES

Sacramento International Airport Master Plan
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File: Master Plan Projects.dwg (Tab: Support Facilities Sites)

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4.5.2 CARGO FACILITIES

Based on conversations with cargo operators and the cargo forecast presented in *Section 2 – Forecast,* a strong cargo growth scenario is expected across the industry. This results in a need for additional cargo space and an update to typically used cargo facility planning metrics.

The projected activity at SMF supports the high-growth cargo scenario forecast, and that scenario was used when determining future capacity needs. The high growth forecast assumes a CAGR of 5.1 percent over the 20-year planning horizon.

As discussed in *Section 3 – Facility Requirements*, 1.0 to 2.0 square feet per annual enplaned ton was historically used for cargo facility planning. However, since demand for one-day and same-day shipping has increased, cargo carriers are requiring more facilities for warehousing and sort equipment, and a metric of 3.5 square feet per annual enplaned ton of cargo better estimates facility requirements for these types of cargo operations.

Using a metric of 3.5 square feet per annual enplaned ton of cargo and the high-growth cargo scenario forecast, the estimated cargo volume by PAL 4 requires warehouse capacity of approximately 1,037,036 square feet. An additional cargo apron, approximately 3,500 feet in length, is also required.

The three likely sites for new cargo facilities are the Economy Lot Area (Site 3), the West Airfield Area (Site 5, existing location), and the North Airfield Area (Site 1). The North Airfield Area can provide cargo operators with separate landside access for their trucks to access CA-99 (and then I-5) via Elverta Road. The existing cargo buildings (on Site 5) are used by cargo operators and airlines for warehousing belly cargo and provisioning supplies.

Airport staff have observed that currently, airline support vehicles must travel through the apron space used by the integrated cargo operators. Potential solutions include relocating this function or swapping the locations of these tenants. The existing RON Apron Area (Site 4) is suitable for a new two-level cargo facility.

The Economy Lot Area and West Airfield Area meet most of the characteristics for an integrated cargo site. However, if provisioning facilities were to be relocated from the current site, the West Airfield Area (Site 5) could accommodate both integrated and cargo-only operators. Additional analysis is needed to ensure that truck traffic will not affect roadways.

4.5.3 GENERAL AVIATION FACILITIES

The fixed base operator (FBO) Lease and Development Agreement with the County describes a 22-acre, multiphase expansion of the GA area at the Airport. The agreement also grants the FBO a right of first refusal to the West Economy Lot (used for holiday overflow parking) and cell phone lot; areas adjacent to its current location on the Airport. The FBO development addresses the GA demand through PAL 4. No other GA operators at SMF expressed a need for additional GA facilities.

The West Airfield (existing location) meets all the required characteristics for future expansion to meet forecast demand through PAL 4. A completely new facility on another site would likely *not* be cost-effective.

4.5.4 MAINTENANCE FACILITIES

Building and airfield maintenance facility needs do not necessarily increase proportionally with aviation activity, but are more a function of the overall pavement, grassy areas, terminal square footage (requiring maintenance), and climatic conditions. Therefore, Airport maintenance requirements were developed based on information provided by SCDA staff, who identified a total land requirement of 18 acres, or 784,080 square feet of land for expansion in support of airport operations (which includes storage, maintenance, and refuse/recycling yards). SCDA staff also identified several operational deficiencies that result from Airport maintenance functions being located in separate facilities and different locations at the Airport. Consolidating various Airport maintenance functions in a single area is a preferred option. Site 1 (the North Airfield Area) meets all the requirements for maintenance expansion, improvements, or consolidation through PAL 4.

There has been interest in developing aircraft Maintenance, Repair, and Overhaul (MRO) facilities from the airlines at SMF. Three sites have been identified for MRO facilities at the Airport. All of the locations offer direct airfield access: 1) the first site is to the west of Taxiway D and north of the north solar farm, 2) the second site is to the east of Taxiway A and north of Taxiway W, and 3) the third site replaces the existing employee parking lot north of the east solar farm and east of Terminal A.

Existing demand requires the ability to store three ADG-III aircraft within the maintenance facility and park up to four ADG-III aircraft on an adjacent ramp. Each proposed MRO location occupies approximately seven acres, including the hangar, ramp, office space, and employee parking. Access via taxilanes will be required to nearby aprons or other taxilanes/taxiways (this is not included in the seven-acre calculation).

As aircraft operations continue to grow (both commercial and cargo), preserving space for MRO facilities will offer existing and new-entrant airlines the additional capability and benefit to perform MRO on their fleet.

4.5.5 COMMERICAL DEVELOPMENT

The five sites were evaluated for potential development in response to three commercial development opportunities:

- Travel Center (Truck Stop) – A travel center is a commercial facility that provides refueling, a rest area, food, and other services primarily for truck drivers. An average travel center consists of about 10 to 20 acres with a 10,000 square foot building that can accommodate a convenience store, restaurant, shower(s), and truck wash.
- Second Gas Station – Airport management may consider a second gas/compressed natural gas station to provide an enhanced level of service for airline passengers. For planning purposes, a 60,000 square foot station with a 5,000 square foot building space is considered adequate.
- Structural Fire Station – Complementary to the services provided by the Airport fire station, a structural fire station at the Airport would provide additional medical services for any emergencies at the terminals, and would address any fire emergencies in the surrounding communities and I-5 corridor. The fire station would occupy a 1.0-acre plot.

The I-5 Interchange Area (Site 2) is the best fit for commercial development due to its access to roadways and the I-5, its minimal obstruction to nearby facilities, and its location being away from most airport functions.

Development on either side of I-5 within Site 2 is possible. South of the I-5 offers offer greater flexibility for a developer, but the lack of infrastructure connections will require larger upfront investment. Commercial development north of the I-5 will likely require additional changes to the roadway infrastructure or configuration as traffic increases.

4.5.6 SITE ASSESSMENT

The following site characteristics are used to evaluate each of the five sites based on professional judgment and experience at the Airport.

4.5.6.1 Airfield Access

A site with direct access (preferably without passing through security gates) to the airfield is categorized as "pro." A site located in proximity to the airfield, but with access only through a security gates is categorized as "con". A site that requires the use of Airport roadway segments to access the airfield is categorized as "con."

4.5.6.2 Landside Access

This characteristic includes access for employees and company vehicles. A site with direct access to roadways and quick access to I-5 is categorized as "pro." A site located farther from I-5 that requires the use of semi-private roads, or that has limited ability to provide parking spaces is categorized as "con." An island site with very restricted or no roadway access is categorized as "con."

4.5.6.3 Taxiway Frontage

A paved site located adjacent to a taxiway, thereby allowing aircraft and ground support equipment to maneuver is categorized as "pro." A site with some access to taxiways, or partially unpaved, is categorized as "con". A site that would not permit access to taxiways is categorized as "con".

4.5.6.4 Existing Facilities

A site with recently built facilities, such as sufficient paved areas, sufficient building space, and with utilities, is categorized as "pro." A site with no infrastructure is categorized as "con". A site with old infrastructure that may trigger major retrofits is categorized as "con".

4.5.6.5 Geometric Characteristics

A rectangular-shaped site with large acreage is categorized as "pro". Conversely, a site with oddly shaped boundaries and unmovable constraints, such as a river, is categorized as "con".

4.5.6.6 Environmental

Most of the Airport is located in a floodplain and any unpaved site may require floodplain fill work. A site reserved for wildlife habitat conservation, or having any other known environmental impacts is categorized as "con". A site with underground tanks, or a history of previous spills, is categorized as "con". Sites with no known major environmental impacts are categorized as "pro".

Table 4-5 shows the pros and cons of each site. Consideration of available space, opportunity costs, lost revenue, and construction costs will influence final priorities and site selection.

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Table 4-5 Site Pros and Cons

SITE	PROS	CONS
1 – North Airfield	• Good airfield access • Good taxiway frontage • Good geometric characteristics • No major environmental impacts • Can provide cargo operators with separate landside access for their trucks to access CA-99 (and then I-5) via Elverta Road • Can provide cargo operators with immediate access to runways, some access to airport roadway segments, and has minimal obstruction to nearby facilities; site is away from terminals and can accommodate a new tenant; no obstruction to facility expansion(s) • Meets requirements for maintenance facilities because of access to all parts of airport, has minimal obstruction to nearby facilities, and is away from other tenants • For GA facilities, provides immediate access to airfield; minimal obstruction to nearby facilities; site can accommodate new tenant; does not obstruct major facility expansion	• Access for passengers using the terminal (landside access) is unavailable • Fair existing facilities
2 – I5 Interchange Area	• Good landside access • Good geometric characteristics • No major environmental impacts • Preferred site for commercial development due to access to roadways and I-5, minimal obstruction to nearby facilities, and away from current airport functions	• Poor airfield access • No taxiway frontage • No existing facilities • Poor site for future GA as no access to airfield • Poor site for future cargo as no immediate access to runways
3 – Economy Lot Area	• Good airfield access • Good landside access • Good taxiway frontage • Good geometric characteristics	• Fair existing facilities • Away from existing GA facilities; new GA facilities in this location would require greater investment • Is currently used for airport parking; this lot has been reaching constrained levels

SITE	PROS	CONS
	• No major environmental impacts • Can provide cargo operators with immediate access to runways, has access to airport roadway segments, minimal obstruction to nearby facilities; site is away from terminals and can accommodate a new tenant • For GA facilities, provides immediate access to airfield, access to airport roadways segments; minimal obstruction to nearby facilities; site can accommodate new tenant	
4 – RON Area	• Good airfield access • Good taxiway frontage • Good geometric characteristics • No major environmental impacts	• Fair landside access • Fair existing facilities • Poor site for maintenance facility expansion as there would be obstruction to nearby facilities • Poor site for GA expansion as there is potential for obstruction to nearby facilities, site is too close to concourses, and may obstruct major facility expansion • Poor site for cargo expansion as there is potential for obstruction to nearby facilities, site is too close to concourses, does not accommodate a new tenant well, and may obstruct major facility expansion
5 – West Airfield	• Good airfield access • Good landside access • Good taxiway frontage • Good geometric characteristics • No major environmental impacts • For GA facilities provides immediate access to airfield, access to airport roadway segments; minimal obstruction to nearby facilities; site is away from concourses; existing GA facilities located on this site	• Fair existing facilities • Poor site for maintenance facility expansion as there would be obstruction to nearby facilities; site is away from most existing maintenance facilities

Source: Sacramento Department of Airports, 2020

4.5.7 SUPPORT FACILITIES RECOMMENDATION

The recommended land uses for each of the five development sites are shown on Figure 4-13. Generally, Site 1 is focused on cargo development, maintenance facilities, and MRO; Site 2 is focused on commercial development; Site 3 is focused on parking facilities; Site 4 is focused on terminal expansion; and, Site 5 is focused general aviation and cargo development.

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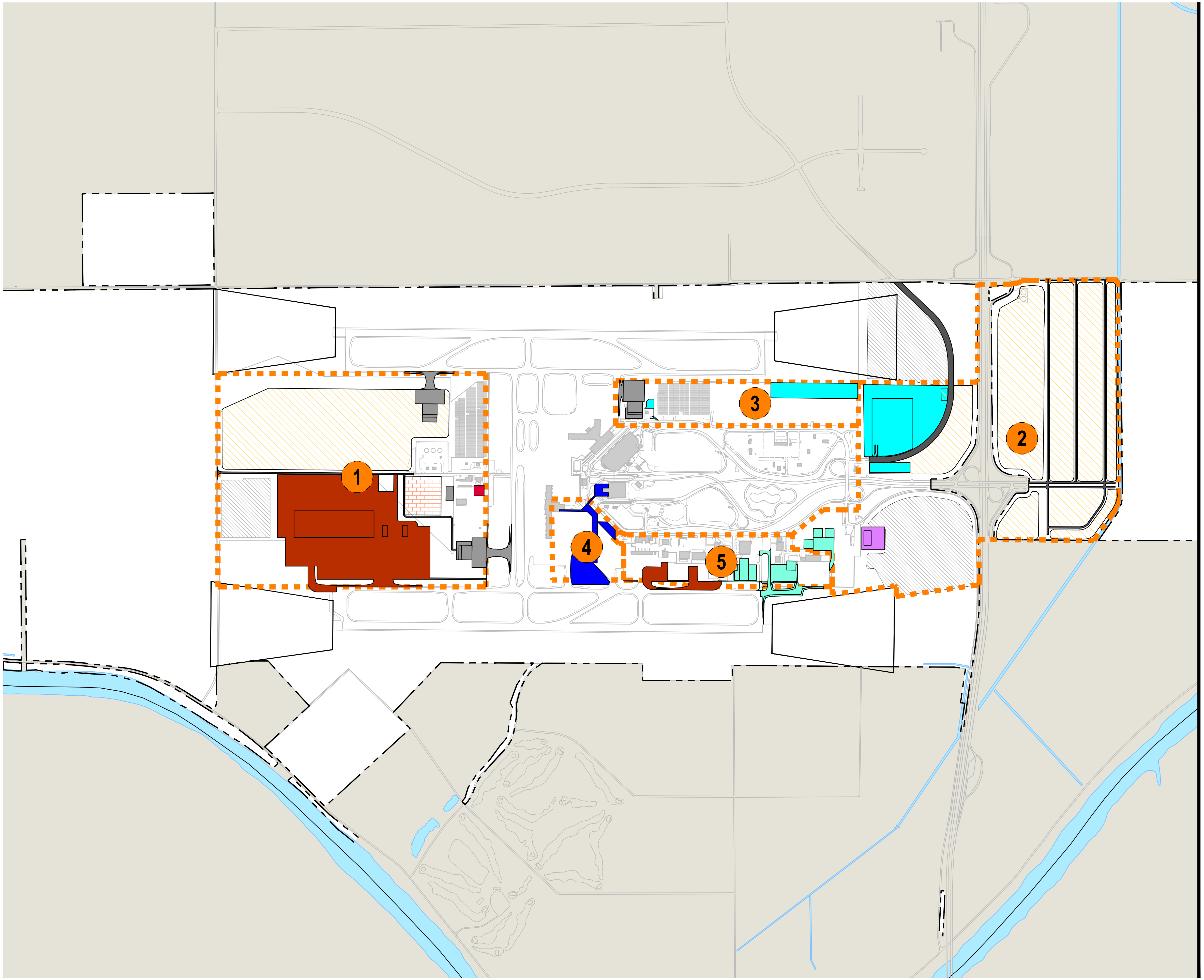

LEGEND

- AIRPORT PROPERTY LINE
- Aircraft Maintenance, Rehabilitation, and Overhaul
- Airport Fire
- Air Traffic Control Tower
- Cargo Facilities
- Commercial Development
- General Aviation
- Landscape Maintenance
- Parking Facilities
- Roadways
- Terminal / Concourse Facilities
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

N

0 1000' 2000'
GRAPHIC SCALE IN FEET

FIGURE 4-13

SUPPORT FACILITY LAND USE RECOMMENDATIONS

Sacramento International Airport Master Plan
July 2020

File: Master Plan Projects.dwg (Tab: Support Facilities)

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4.6 PREFERRED ALTERNATIVE

In determining the preferred alternative (Figure 4-14) for the Airport, SCDA staff considered existing land use development patterns, operational needs, operational impacts, discussions with tenants, long-term operations and maintenance costs, and longer-term growth requirements.

- The existing area identified for a Runway 16L/34R extension and parallel Taxiway D extension will continue to be reserved, should it be needed.
- The areas for Taxiway V, Taxiway A connectors, holdpads, and the replacement ATCT will continue to be reserved.
- Terminal Alternative 3, with optional phasing on Concourse B, provides the most flexibility to accommodate near-term terminal expansion needs and PAL 4 demand and will be reserved as such.
- RON Alternative A2 will be reserved as future apron area for RON parking.
- Construct a garage on the current Hourly B surface lot in either one or two phases to meet close-in parking demands and compensate for public parking spaces lost in the Daily Lot. Additional remote surface parking should also be constructed in phases to meet demand, but also to minimize O&M costs associated with shuttle bus operations.
- ConRAC Alternative 2, with its smaller footprint is the preferred alternative. Cost, constructability, and RAC stakeholder input will determine whether a two-level or four-level ConRAC is ultimately constructed at SMF.
- Site 1 and Site 5 will be reserved for air cargo development.
- Site 1 will be reserved for maintenance facility development and MRO facilities.
- Site 2 will be reserved for commercial development.
- Site 3 will be reserved for parking.
- Site 4 will be reserved for terminal development
- Site 5 will be reserved for general aviation development.

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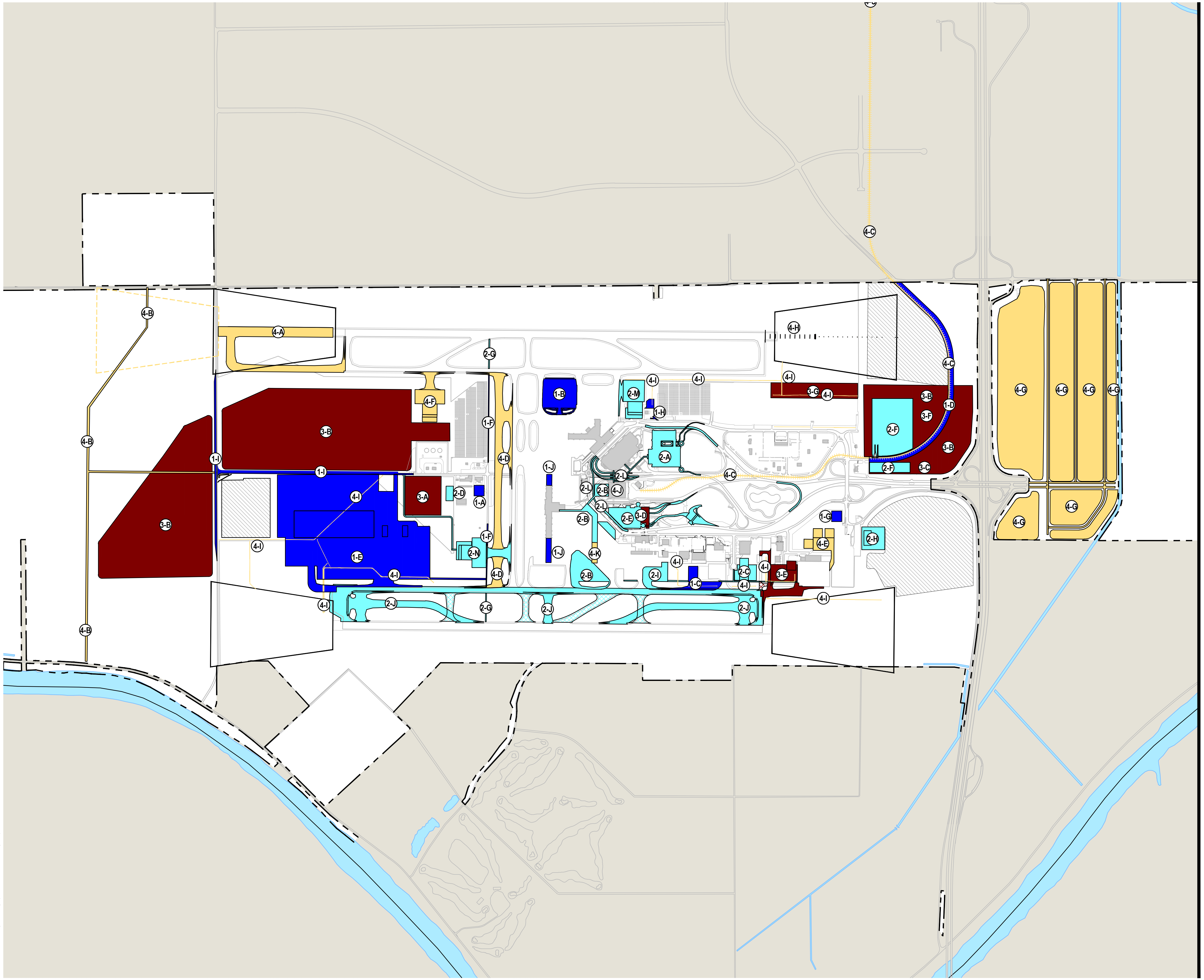

LEGEND

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

PROPOSED PROJECTS

- 1-A NEW ARFF
- 1-B RON APRON
- 1-C CARGO APRON EXPANSION
- 1-D ELKHORN BOULEVARD EXTENSION
- 1-E NEW CARGO FACILITY
- 1-F WIDEN AND OVERLAY CY HOMER ROAD
- 1-G CITY OF SACRAMENTO COMMUNITY FIRE STATION
- 1-H NEW AIRPORT BUS PARKING LOT
- 1-I ELVERTA AND EARHART ROADWAY IMPROVEMENTS
- 1-J CONCOURSE B EXPANSION
- 2-A NEW CONRAC
- 2-B TERMINAL B PEDESTRIAN WALKWAY, RELOCATED SSCP, 6-GATE EXPANSION W/ APRON
- 2-C PHASE 1 GA IMPROVEMENTS
- 2-D AIRPORT MAINTENANCE EQ. STORAGE
- 2-E NEW PARKING GARAGE
- 2-F PHASE 1 ECONOMY LOT EXPANSION
- 2-G CY HOMER ROAD EXTENSION TO BOTH RUNWAYS
- 2-H LANDSCAPE MAINTENANCE BUILDING
- 2-I AIR CARGO APRON EXPANSION
- 2-J TXY A TAXIWAY EXIT RECONFIGURATION AND HOLDING POSITIONS
- 2-K GROUND TRANSPORATION CENTER
- 2-L TERMINAL B BYPASS ROADWAY
- 2-M AIRCRAFT MRO EAST
- 2-N AIRCRAFT MRO NORTHWEST
- 3-A NEW AIR TRAFFIC CONTROL TOWER
- 3-B COMMERCIAL DEVELOPMENT/AIRSIDE DEVELOPMENT (≈324 ACRES)
- 3-C AIRPORT HOTEL (NOT SHOWN)
- 3-D PARKING GARAGE EXPANSION
- 3-E PHASE 2 GA IMPROVEMENTS
- 3-F PHASE 2 ECONOMY LOT EXPANSION (SOUTH)
- 3-G PHASE 3 ECONOMY LOT EXPANSION (EAST)
- 4-A RUNWAY EXTENSION 16L/34R TO 11,000FT
- 4-B ELVERTA ROAD RELOCATION
- 4-C LIGHT RAIL SERVICE TO SMF
- 4-D NEW CROSSFIELD TXY V
- 4-E PHASE 3 GA IMPROVEMENTS
- 4-F AIRCRAFT MRO NORTHEAST
- 4-G COMMERCIAL DEVELOPMENT (≈231 ACRES)
- 4-H NEW ILS FOR RUNWAY 34R
- 4-I CULVERT DITCHES
- 4-J ADD BAGGAGE/TICKETING TO TERMINAL B WITHIN STRUCTURE
- 4-K TERMINAL B 6-GATE EXPANSION

N

0 1000' 2000'

GRAPHIC SCALE IN FEET

FIGURE 4-14

MASTER PLAN PROJECTS

Sacramento International Airport Master Plan
July 2020

File: Master Plan Projects.dwg (Tab: Master Plan Projects)

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4.6.1 PHASING

The phasing plan for the Preferred Alternative is a combination of projects dependent upon PALs as described in *Section 2 – Forecast,* and projects driven by marketplace and fiscal readiness. For the purpose of this section, projects as closely tied to each PAL are grouped together. *Section 5 – Development Plan*, will describe the estimated timeline and financial cost of each project in more detail.

The Preferred Alternative projects are shown on Figures 4-15 through 4-18, as per the corresponding alpha-numeric list below.

- PAL 1

  1-A) New ARFF station building north of CY Homer Road and west of Earhart Drive

  1-B) Additional terminal apron in proximity to Concourse A (RON Apron)

  1-C) Cargo apron expansion of the southern portion of the existing air cargo apron pavement

  1-D) Elkhorn Boulevard extension from Metro Air Park to Crossfield Drive

  1-E) New air cargo building and air cargo apron with a taxiway connector to Runway 34R end

  1-F) Widen (and Overlay) Cy Homer Road to two lanes

  1-G) New community fire station at northwestern corner of Lindbergh Drive and Crossfield Drive; fire station to be built by the City of Sacramento Fire Department on County-owned land

  1-H) New shuttle bus maintenance and staging facility east of Aviation Drive

  1-I) Elverta and Earhart Roadway Improvements

  1-J) Concourse B Expansion

- PAL 2

  2-A) CONRAC facility

  2-B) Terminal B pedestrian walkway, relocated SSCP, and gate expansion (6 gates) with apron

  2-C) Phase 1: General aviation area improvements/expansion including corporate hangars, fixed base operator facility, and apron

  2-D) New airport, airfield, and equipment maintenance buildings north of Cy Homer Road

  2-E) New Parking Garage (Hourly B Lot)

  2-F) Phase 1: Expansion of Economy parking surface lot north of I-5 and east of Airport Boulevard to accommodate 2,800 automobile parking spaces

  2-G) Extension of Cy Homer Road to both runways

  2-H) Landscape maintenance area and building south of the General Aviation area and employee parking lot

  2-I) Rehab and expansion of northern portion of the existing air cargo apron pavement

  2-J) Taxiway A holdpads and high-speed, perpendicular taxiway exists for RWY 16R/34L

  2-K) Ground Transportation Center (shared components with ConRAC)

  2-L) Terminal B Bypass Roadway

  2-M) MRO Facility (East side adjacent to Terminal A)

  2-N) MRO Facility (Northwest side adjacent to new air cargo development

- PAL 3

  3-A) New ATCT north of Cy Homer Road and west of Earhart Drive

  3-B) Commercial development north of I-5 and east of Airport Boulevard, as well as east of Earhart Road and north of existing Elverta Road (approximately 324 acres)

  3-C) Airport Hotel (not shown)

  3-D) Expand Terminal B parking garage

  3-E) Phase 2: General aviation area improvements/expansion including corporate hangars, fixed base operator facility, and apron

  3-F) Phase 2: Expansion of Economy parking surface (south)

  3-G) Phase 3: Expansion of Economy Parking surface (east)

- PAL 4

  4-A) 2,400-foot extension of Runway 16L/34R to provide a total runway length of 11,000 feet

  4-B) Elverta Road relocation

  4-C) Light rail service to SMF passenger terminal

  4-D) New north Crossfield Taxiway V

  4-E) Phase 3: General aviation area improvements/expansion including corporate hangars, fixed base operator facility, and apron

  4-F) MRO Facility (Northeast side adjacent to solar farm)

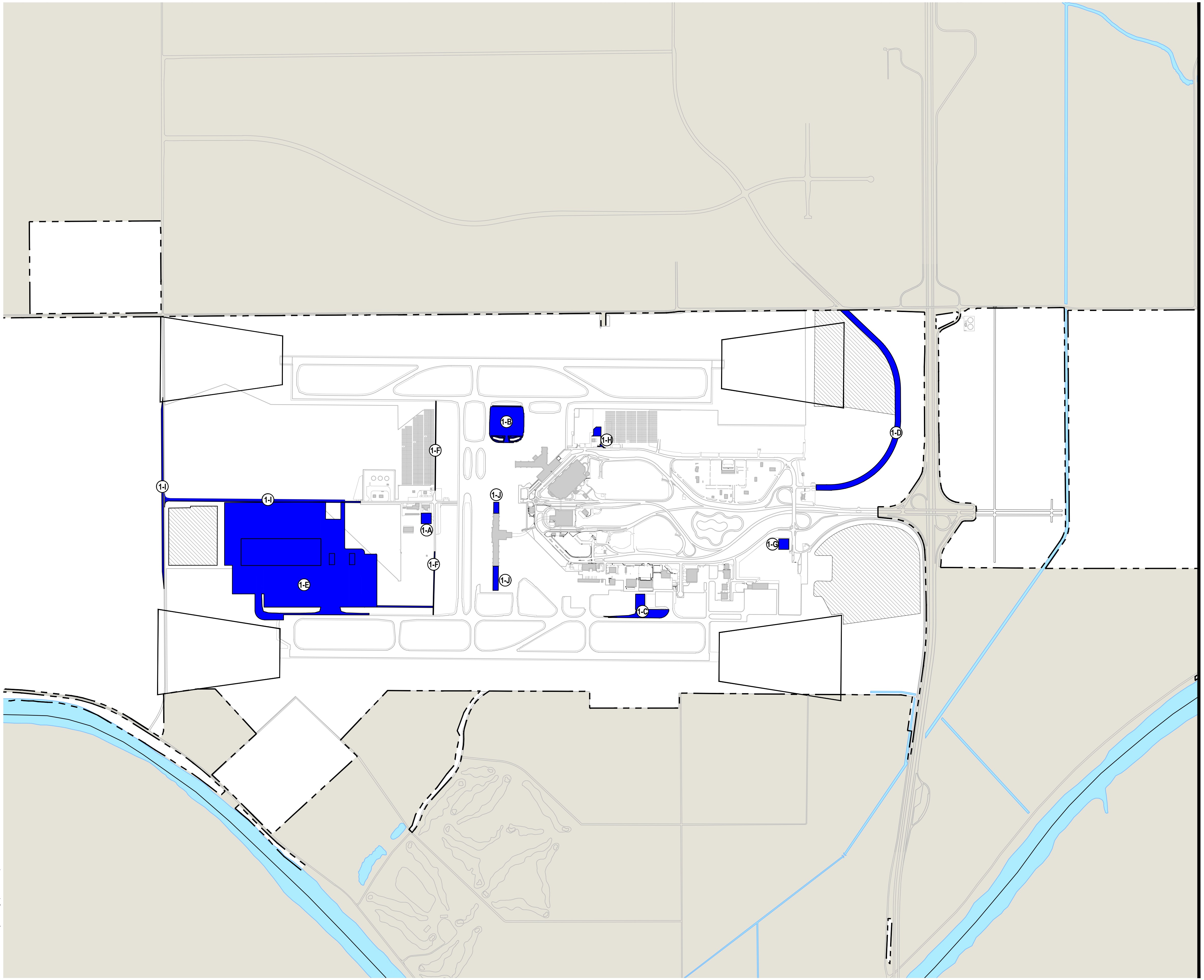
  4-G) Commercial Development south of I-5 (approximately 231 acres)

  4-H) New localizer, ILS glide slope, and ALSF-2 for new ILS approach to Runway 34R

  4-I) Place ditches within culverts and pipes in RPZ and road areas

  4-J) Expand Terminal B (addition Baggage/Ticketing within Structure)

  4-K) Terminal B Gate Expansion (6 gates) to 44 gates total



LEGEND

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

PROPOSED PROJECTS

- 1-A NEW ARFF
- 1-B RON APRON
- 1-C CARGO APRON EXPANSION
- 1-D ELKHORN BOULEVARD EXTENSION
- 1-E NEW CARGO FACILITY
- 1-F WIDEN AND OVERLAY CY HOMER ROAD
- 1-G CITY OF SACRAMENTO COMMUNITY FIRE STATION
- 1-H NEW AIRPORT BUS PARKING LOT
- 1-I ELVERTA AND EARHART ROADWAY IMPROVMENTS
- 1-J CONCOURSE B EXPANSION

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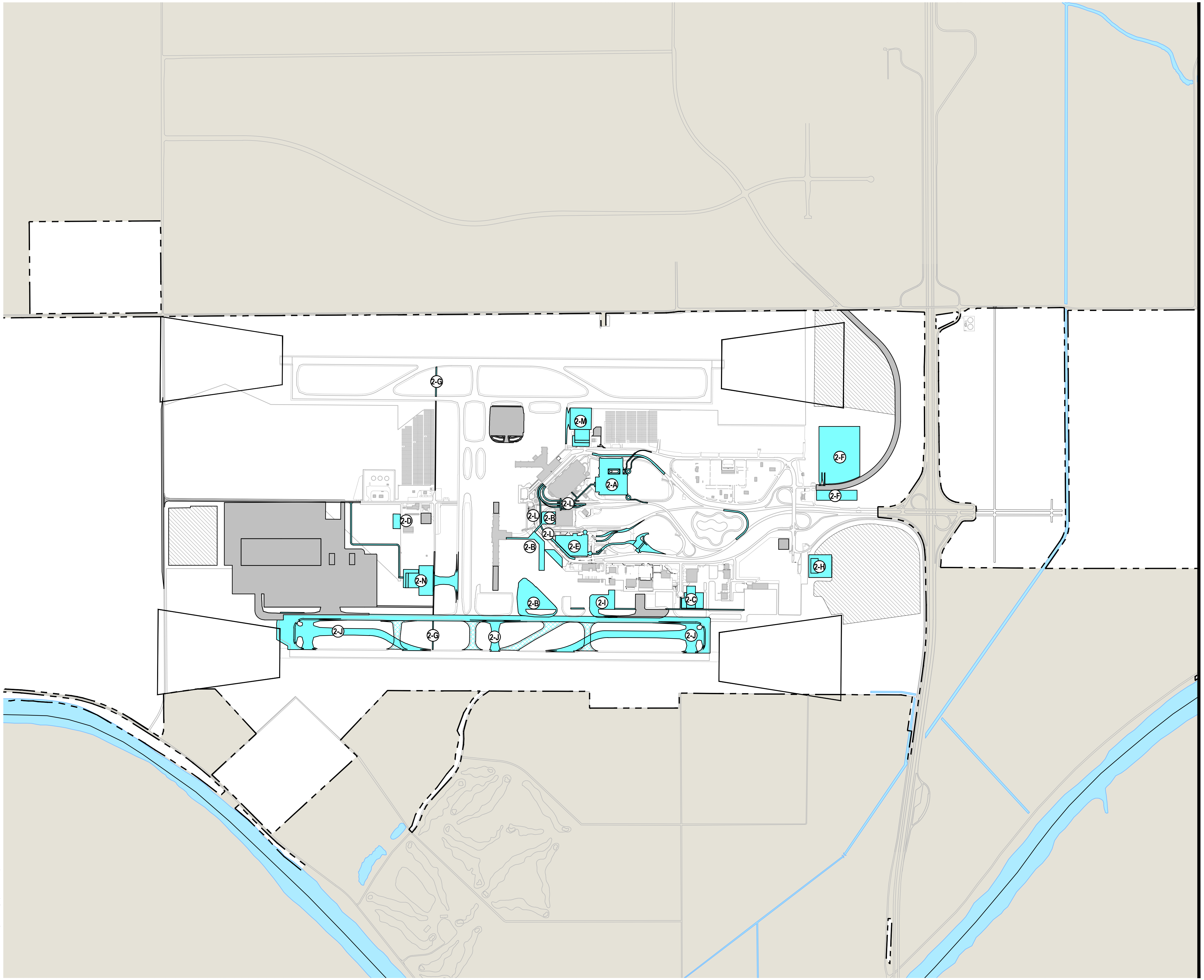
GRAPHIC SCALE IN FEET

FIGURE 4-15

PAL 1 DEVELOPMENT

Sacramento International Airport Master Plan
July 2020

File: Master Plan Projects.dwg (Tab: PAL 1)



LEGEND

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

PROPOSED PROJECTS

- 2-A NEW CONRAC
- 2-B TERMINAL B PEDESTRIAN WALKWAY, RELOCATED SSCP, 6-GATE EXPANSION WITH APRON
- 2-C PHASE 1 GA IMPROVEMENTS
- 2-D AIRPORT MAINTENANCE EQ. STORAGE
- 2-E NEW PARKING GARAGE
- 2-F PHASE 1 ECONOMY LOT EXPANSION
- 2-G CY HOMER ROAD EXTENSION TO BOTH RUNWAYS
- 2-H LANDSCAPE MAINTENANCE BUILDING
- 2-I AIR CARGO APRON EXPANSION
- 2-J TXY A TAXIWAY EXIT RECONFIGURATION AND HOLDING POSITIONS
- 2-K GROUND TRANSPORATION CENTER
- 2-L TERMINAL B BYPASS ROADWAY
- 2-M AIRCRAFT MRO EAST
- 2-N AIRCRAFT MRO NORTHWEST

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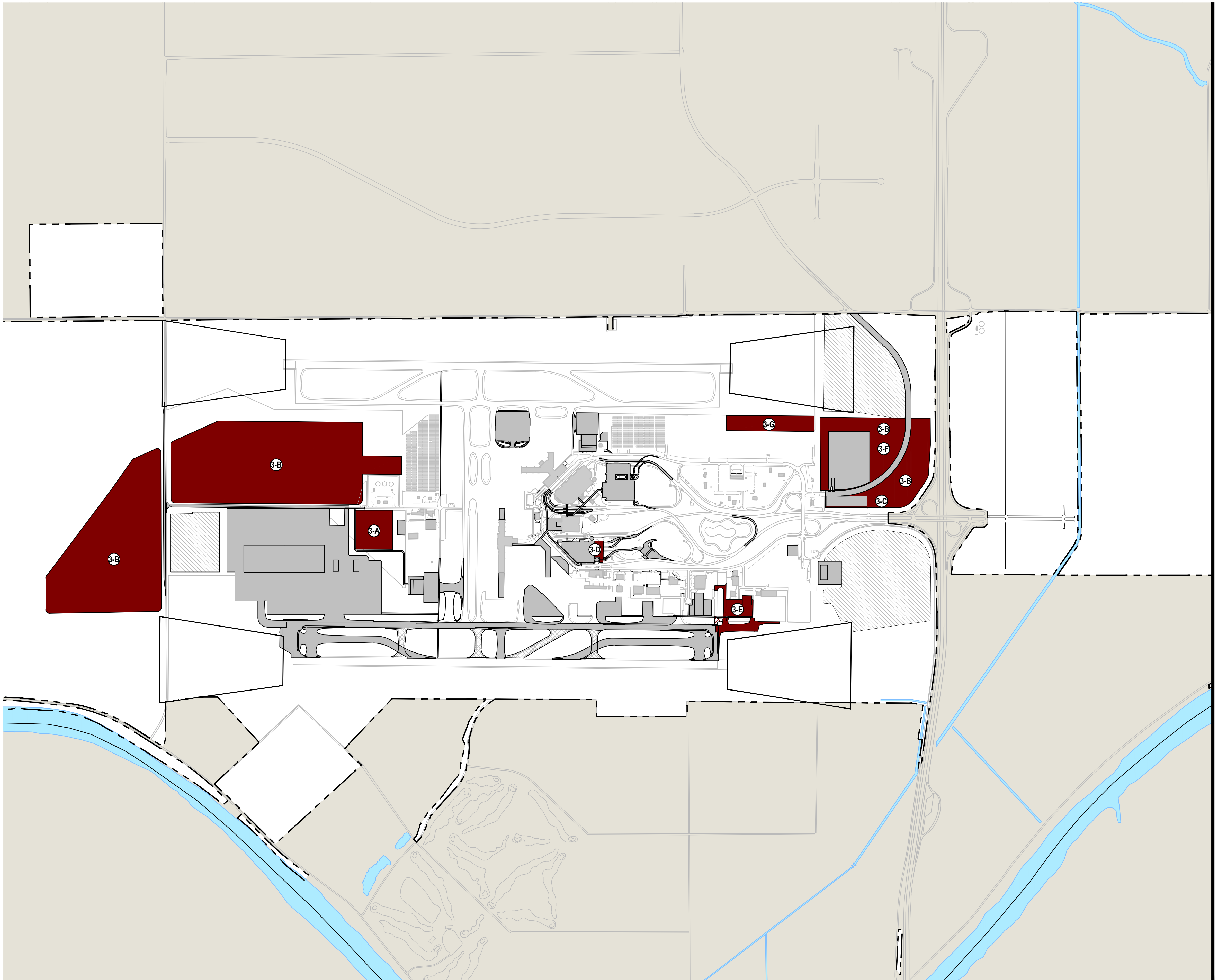
GRAPHIC SCALE IN FEET

FIGURE 4-16

PAL 2 DEVELOPMENT

Sacramento International Airport Master Plan
July 2020

File: Master Plan Projects.dwg (Tab: PAL 2)



LEGEND

AIRPORT PROPERTY LINE
PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
REMOVAL
STORM WATER DETENTION
SACRAMENTO RIVER
OFF-AIRPORT PROPERTY

PROPOSED PROJECTS

3-A NEW AIR TRAFFIC CONTROL TOWER
3-B COMMERCIAL DEVELOPMENT/AIRSIDE DEVELOPMENT (≈324 ACRES)
3-C AIRPORT HOTEL (NOT SHOWN)
3-D PARKING GARAGE EXPANSION
3-E PHASE 2 GA IMPROVEMENTS
3-F PHASE 2 ECONOMY LOT EXPANSION (SOUTH)
3-G PHASE 3 ECONOMY LOT EXPANSION (EAST)

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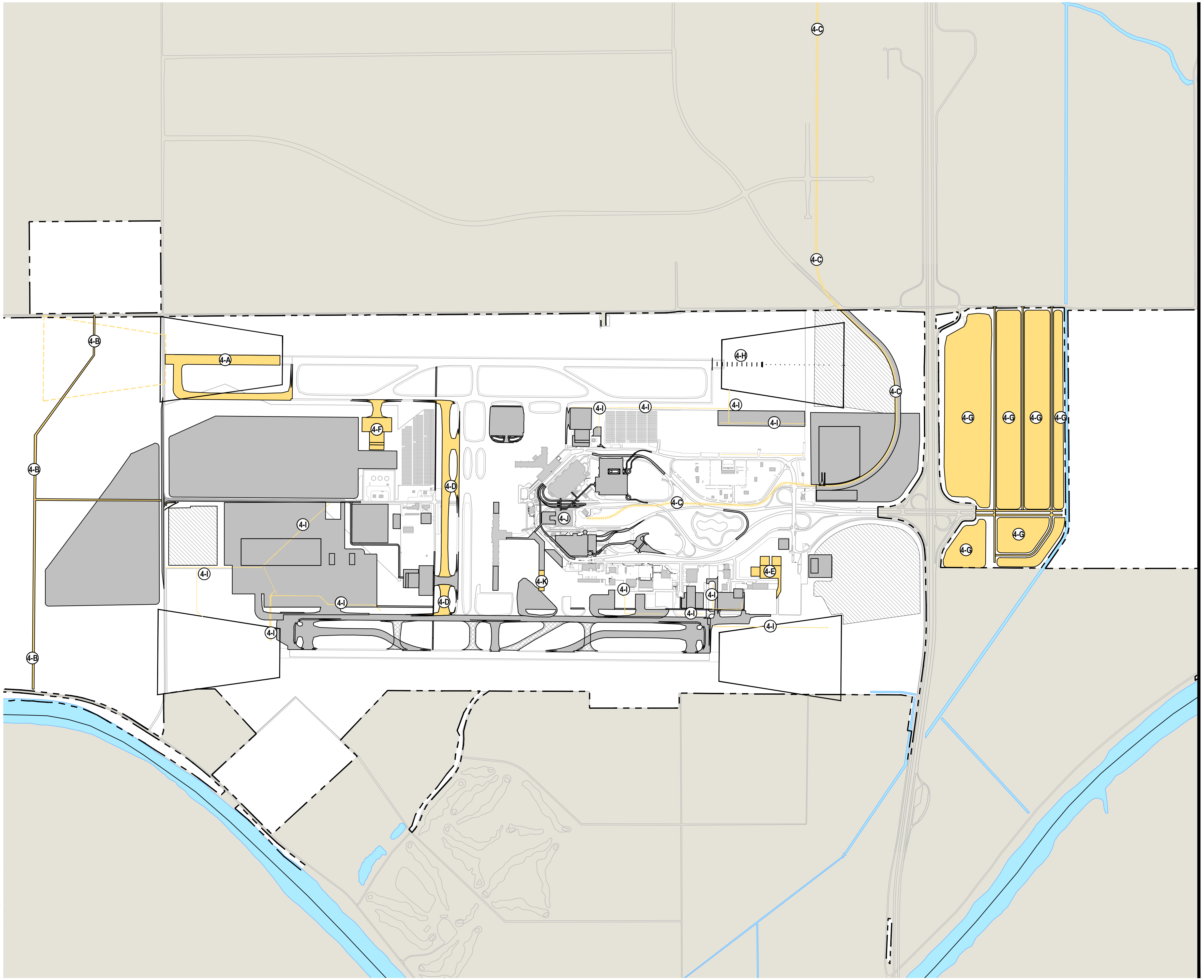
GRAPHIC SCALE IN FEET

File: Master Plan Projects.dwg (Tab: PAL 3)

FIGURE 4-17

PAL 3 DEVELOPMENT

Sacramento International Airport Master Plan
July 2020



LEGEND

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

PROPOSED PROJECTS

- 4-A RUNWAY EXTENSION 16L/34R TO 11,000FT
- 4-B ELVERTA ROAD RELOCATION
- 4-C LIGHT RAIL SERVICE TO SMF
- 4-D NEW CROSSFIELD TXY V
- 4-E PHASE 3 GA IMPROVEMENTS
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- 4-K TERMINAL B 6-GATE EXPANSION

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GRAPHIC SCALE IN FEET

FIGURE 4-18

PAL 4 DEVELOPMENT

Sacramento International Airport Master Plan
July 2020

File: Master Plan Projects.dwg (Tab: PAL 4)

TC-1

Transportation Study

VMT Assessment &
Local Access, Safety, and Circulation Study

SMF Master Plan Update
Sacramento County, California

DRAFT
August 3, 2020

Prepared for:

Sacramento County Airport System

Prepared by:

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REGISTERED PROFESSIONAL ENGINEER
MATTHEW D. WEIR
No. TR 2424
TRAFFIC
STATE OF CALIFORNIA

EXECUTIVE SUMMARY

This report documents the results of a transportation analysis completed for Sacramento International Airport (SMF) Master Plan Update (MPU) and Cargo Facility project (the "proposed project" or "project"). Located in Sacramento County, California, the project proposes to an expansion of enplanements and land uses as included in the SMF Master Plan as well as an expanded cargo facility north of the airport with access off of Earhart Drive.

The purpose of this report is to provide traffic analysis to identify appropriate improvements for identified deficiencies and to refine roadway network and intersection configurations for the cumulative scenario.

The remaining sections of this report document a vehicle miles traveled (VMT) assessment, as well as a local access, safety, and circulation study. This includes an analysis of the existing traffic conditions, analysis methodologies, and the anticipated impact of the projects on the surrounding roadway network. This study was performed in accordance with the County of Sacramento's traffic impact analysis guidelines, and the scope of work approved by the County.

This analysis includes evaluation of the following transportation facilities:

- 23 intersections within Sacramento County
- 15 roadway segments within Sacramento County
- I-5 (within the study area)
- SR-99 (within the study area)

Based on the County's requirements, this VMT Assessment & Access, Safety, and Circulation Study was conducted for the study facilities for the following scenarios:

- Existing (2020) Conditions
- Existing (2020) plus Proposed Project (Master Plan Update) Conditions
- Existing (2020) plus Proposed Project (Cargo Facility) Conditions
- Existing (2020) plus Proposed Project (Master Plan Update and Cargo Facility) Conditions
- Cumulative Conditions[+]
- Cumulative plus Proposed Project (Master Plan Update) Conditions
- Cumulative plus Proposed Project (Cargo Facility) Conditions
- Cumulative plus Proposed Project (Master Plan Update and Cargo Facility) Conditions

Significant findings of this study regarding the proposed Master Plan Update include:

- An overall VMT reduction of 486,941 daily VMT is expected for the proposed Master Plan Update and a finding of less than significant impact for CEQA purposes.
- The MPU project generates vehicle trips that results in Existing (2020) Condition deficiencies which are recommended for improvement.
- It is recommended that the twelve (12) deficiencies related to the MPU project noted in this report be addressed by implementing the recommended improvements.

Significant findings of this study regarding the proposed Cargo Facility include:

- The average VMT per employee for the SACOG Region is 12.58 vehicle miles, while the average VMT per employee for the Cargo Facility is 22.59 vehicle miles. This result indicates a finding of significant impact for the proposed Cargo Facility for CEQA purposes.
- The study area intersections are not anticipated to be negatively impacted by the project traffic during the typical weekday, AM and PM commute peak hours.

- The shift change at the cargo facility was found to exceed the capacity of the existing roadway network immediately adjacent to the site and resulted in the following recommended improvements:
  - Intersection #2 – Elverta Road @ Earhart Drive
    - Install a traffic signal (as warranted and documented later in this report)
    - Install dual northbound right-turn lanes with 175-feet of queue storage (adequate deceleration distance should be provided in addition to this storage)
    - Install eastbound receiving lane to accept the #2 northbound right-turn lane
    - Install westbound dual left-turn lanes with 300-feet of queue storage (adequate deceleration distance should be provided in addition to this storage)
    - Install southbound receiving lanes to accept the westbound left-turn lanes
  - Intersection #3 – Elverta Road @ Power Line Road
    - Install a traffic signal (as warranted and documented later in this report)
    - Install additional eastbound through lane to provide for two (2) through lanes from Earhart Drive to Power Line Road
    - Install an eastbound receiving lane to accept the additional eastbound through approach lane
- The rural roadway segments on Elverta Road from Earhart Drive to SR-99 exceed 6,000 ADT due to the addition of project traffic. Based on functionality criteria, the project shall provide standard section (6-ft paved shoulder, two 12-ft travel lanes, 6-ft paved shoulder) on Elverta Road from Earhart Drive to SR-99.
- It is recommended that the eight (8) deficiencies related to the cargo facility traffic noted in this report be addressed by implementing the recommended improvements.

Significant findings of this study regarding the combination of the Master Plan Update and the Cargo Facility include:

- The combination of the Cargo Facility and the MPU projects results in Cumulative Condition queuing deficiencies.
- It is recommended that the two (2) deficiencies related to the combination of the cargo facility and the MPU projects noted in this report be addressed by implementing the recommended improvements.

Other Significant findings:

- Generally, the MPU project traffic interacts with roadways distinct from the proposed cargo facility.
- It is recommended that, with the implementation of the 4-lane roadway on Elverta Road (east of Metro Air Parkway) included in the General Plan, the intersection of Elverta Road and Metro Air Parkway include signalization.
- It is recommended to implement safety measures such as flexible delineators at the intersection of West Elverta Road with SR-99 Southbound Ramps (#6) to address the observation of compliance issues related to the prohibited westbound left-turn movements.
- It is recommended that future studies and design of I-5 and SR-99 consider existing and anticipated capacity constraints. This report documents the following LOS deficiencies in the Existing (2020) and Cumulative Conditions:
  - Existing (2020) Conditions Deficiencies:
    - SR-99 - Elkhorn Boulevard Off-Ramp (northbound)
    - SR-99 - North of I-5 Southbound On-Ramp (northbound)
    - SR-99 - I-5 Southbound On-Ramp (northbound)
  - Cumulative Conditions Deficiencies:

- I-5 - Metro Parkway Diagonal On-Ramp (southbound)
- SR-99 - Elverta Road Off-Ramp (northbound)
- SR-99 - North of Elkhorn Boulevard Diagonal On-Ramp (northbound)
- SR-99 - Elkhorn Boulevard Diagonal On-Ramp (northbound)
- SR-99 - Elkhorn Boulevard Off-Ramp (northbound)
- SR-99 - North of I-5 Southbound On-Ramp (northbound)
- SR-99 - I-5 Southbound On-Ramp (northbound)
- SR-99 - South of I-5 Southbound On-Ramp (northbound)

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INTRODUCTION

The Sacramento County Department of Airports (SCDA or the Department) owns and operates Sacramento International Airport (SMF or the Airport). The purpose of this Vehicle Miles Traveled (VMT) Assessment and Local Access, Safety, and Circulation Study is to document the offsite impacts associated with the anticipated changes in Airport operations resulting from modifications to the Master Plan in the form of additional gates, and the inclusion of a large-scale cargo facility. This study considers the VMT and localized traffic operations and safety aspects of these two, individual and cumulatively evaluated project components. The outcome of this study will assist SCDA by providing guidance for the continued improvement of SMF over a 20-year planning horizon and beyond as it relates to the “off-airport” network of roadways and freeway systems that serve SMF and the related airport land uses.

Background

SMF is located in Sacramento County, approximately 10 miles northwest of downtown Sacramento. The Airport occupies an approximately 5,900-acre site that is generally bounded by Power Line Road to the east, Garden Highway to the west, the Sacramento River to the west and south, and West Riego Road to the north.

Primary access to the Airport and terminal facilities is provided from the south via the I-5 interchange with Airport Boulevard, with an alternate route provided by Bayou Way. Access to airport facilities on the north portion of the Airport is provide via West Elverta Road and Earhart Drive. West Elverta Road connects to State Route 99 (SR-99) several miles east of the Airport.

The primary sources for changes to traffic and circulation identified in the Airport’s *Master Plan*[1] and being evaluated in this study include:

- The forecasted enplanement (passenger) growth over the 20-year planning horizon and subsequent addition of facilities and employees to support that passenger growth
- The development of near-term Air Cargo Facilities
- The development of Commercial Land Uses in/near the study area over the planning horizon

PROJECT DESCRIPTION

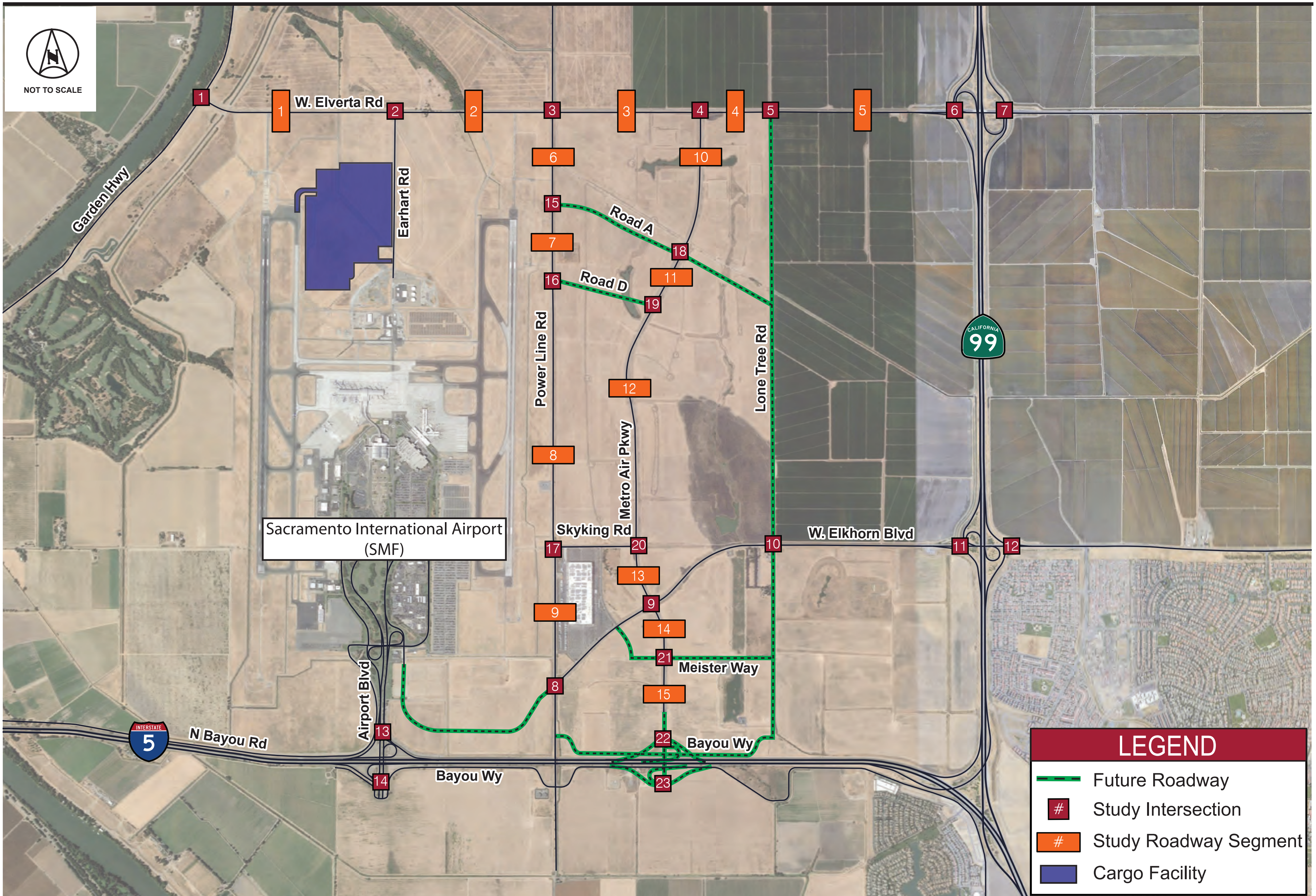
For the purposes of this analysis, the “Proposed Project” is defined as follows:

- Airport Master Plan Update (MPU)
  The Airport Master Plan Update includes the addition of gates, which equate to additional peak-hour flights, and will be the primary determinant of the change in vehicle traffic conditions. All other land use modifications identified in the updated Master Plan are assumed to serve the airport itself and therefore the additional trips are associated with the airport’s number of gates and flights.
- Cargo Facility (Cargo)
  A large-scale cargo facility is planned, with access assumed to be achieved exclusively to/from the north (Elverta Road). The addition of this facility necessitates the identified study facilities along Elverta Road, State Route 99 (SR-99), and within the Metro Air Park.

A project vicinity map is shown in Figure 1.

[1] *Sacramento International Airport Master Plan, Figure 4-13, Master Plan Projects*, July 2020.

SMF VMT Assessment & Local Access, Safety, and Circulation Study



Kimley»Horn

Figure 1
Project Vicinity Map

SB 743/VMT ASSESSMENT

Purpose

This section documents the Vehicle Miles Traveled (VMT) analysis which was completed for the purpose of determining Senate Bill 743 (SB 743) compliance for the Proposed Project. The analysis is separated into two distinct analyses that correspond to these facilities:

- Master Plan Update
  This scenario focuses on evaluating the impact of the additional aircraft gate expansion and related increase in passengers and employees over the next 20-years as a result of the Airport Master Plan Update.
- Cargo Facility
  This scenario focuses on evaluating the impact of the proposed Cargo facility based on employee commute trips. While heavy-vehicle VMT is not evaluated quantitatively, discussion is provided for informational purposes.

The following sections provide discussion on the approach, methodology and assumptions, and results for these two analyses.

Approach to Airport Expansion (MPU) Scenario

Passenger flight demand is a unique circumstance considering that, as a transportation mode, there are often few competitive options. Within the Sacramento Region the alternative to passenger flight is primarily passenger vehicle travel although there are some other limited options including long distance bus service. Still, these vehicular alternatives are often not considered feasible when the additional time and cost for travel are factored (extended distance travel has both transportation costs and potential lodging/food costs). As a result, vehicular travel is considered infeasible by many travelers for longer trips, particularly as they extend beyond the state boundaries or farther. Accordingly, the demand for air travel is typically a function of the required trip characteristics and not necessarily the provision of air travel nearby. This phenomenon is demonstrated by the willingness of passengers to leave the immediate SMF market area to obtain flights that include the destination and other characteristics (preferred departure times, reduced layovers, etc.) required by air travelers. The *SMF Catchment Area Analysis*[2] provides information on the existing unmet passenger flight demand. Specifically, it presents data showing that more than 2.1 million domestic passengers and more than 1.6 million international passengers travel to airports outside of the Sacramento region to take flights. Primarily, these passengers use airports in the Bay Area with San Francisco International Airport (SFO), Oakland International Airport (OAK), and San Jose International Airport (SJC) capturing the majority of the passenger service. Accordingly, if the Airport does not expand and/or provide additional passenger service that meets the need of traveler, these longer vehicular trips to Bay Area airports would be assumed to continue or even expand as the demand for service naturally increases with population growth over time. The provision of additional gates to serve this unmet local demand is a primary catalyst of the Proposed Project. Estimates for future air travel prepared by the Airport currently assume that half of the anticipated growth over the next twenty years will result from recapturing passengers from these Bay Area airports.

Considering that demand for passenger air travel is like other basic demands, namely that the demand for the service exists largely irrespective of the proximity of the service, it is appropriate to establish regional net change metric as its basis. This approach is consistent with the 2018 Office of Planning and Research[3] (OPR) guidance in terms of its recommendation regarding land uses with a significant customer basis.

[2] *SMF Catchment Area Analysis*. Campbell-Hill Aviation Group, LLC. April 2020.

[3] *Technical Advisory on Evaluating Transportation Impacts in CEQA* (2018), California Governor's Office of Planning and Research

Although the OPR guidance only specifically addresses residential, office, and retail uses, there is discussion[4] included regarding how a customer component of other uses should utilize the retail methodology as its basis. Given that there is also a significant employment support system that accompanies passenger air service, employee work trips have also been considered in the analysis. Based on discussions with Sacramento County staff, the basis for a significant impact was determined to appropriately be based on the regional net change in VMT resulting from the growth in passenger and employee VMT in the aggregate as compared to existing conditions. Detailed discussion on this methodology is provided in the Methodology and Assumptions section below.

Approach to Cargo Facility Scenario

While the Cargo Facility is expected to provide additional jobs and some related trips to the surrounding area, the facility itself is not expected to be the principal catalyst for new trips. Rather, it is anticipated that these trips would most likely occur regardless of whether this location were developed as it is in response to an existing demand for goods. Accordingly, if this site were not developed, a similar site will be developed elsewhere to meet this demand and, as such, the alternative to this development would likely not eliminate related trips.

Similarly, while the proposed Cargo Facility is expected to add trips to the region due to the increase in employment, the expected heavy vehicle trips, like passenger service, are not in response to the provision of the facility. Specifically, the demand for the goods carried by the heavy-vehicle trucks would exist irrespective of the construction of this facility.

The 2018 OPR Guidance[5] indicates that, although heavy vehicle traffic can be included for analysis convenience, the provided analysis requirements are specific to passenger-vehicles and light duty trucks. While it may be appropriate to consider heavy vehicle traffic if directed by the lead agency, it is generally understood that the mechanism for regulating and managing VMT, environmental, and other truck impacts is managed through other aspects of California's regulatory and statutory framework. Irrespective of this, regulatory environment and considering the nature of the end-user of this facility, it is reasonable to assume that this location was selected, at least in part, due to how it effects the end user's transportation costs. Most often businesses who have shipping as a significant part of their operations are sensitive to transportation costs and their relative proximity to customers and suppliers. Accordingly, it is reasonable to assume that warehouse/cargo facilities are often located in a manner to reduce VMT given that it is the interest of their business.

Based on this understanding of the facility, and in consultation with Sacramento County staff, it was determined that the threshold of significance would be work VMT per employee (defined as the commute trip to the work) as compared the Sacramento Area Council of Governments (SACOG) region average for the same metric.

Methodology and Assumptions

Travel Demand Models (TDMs) are broadly considered to be amongst the most accurate of available tools to assess VMT. The SACOG Travel Demand Model (SACSIM) was determined to be the best fit for this project considering the geographic location of the project and the detailed roadway network in the model for the Sacramento region. The 2016 release of SACSIM, which includes a 2012 Base Year version and a 2036 Future Year version, was used to analyze the Existing plus Proposed Project and Future plus Proposed Project scenarios for each of the two analysis scenarios (Master Plan Update and Cargo Facility). The Master Plan Update has a forecast of 20 years of growth so rather than using 2036 as the future forecast year, all analyses were grown to 2040 to be consistent with the growth forecasts. In addition, while SACOG has since released a 2019 version of SACSIM, the final release of this model was not available at the onset of this

[4] 2018 OPR Guidance, Page 5
[5] 2018 OPR Guidance, Page 4

project. SACSIM covers six different counties: El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba, which are assumed to be the major contributors of the trip origins to the passenger service expansion and proposed cargo facility during a typical weekday.

To determine the VMT related to the Master Plan Update, the Traffic Analysis Zone (TAZ) representing the Airport was split to separate the employment from the passenger trips. This split facilitated the analysis of employment VMT and passenger VMT, as well as making it easier to complete other required analyses including select-zone analyses of the project to understand project distribution. The employment VMT was determined by using SACSIM output data and using a methodology consistent with other adopted methodologies in the region. The individual trip table used for the analysis provides information related to every trip made in the region throughout the day including travel mode, origin location, destination location, origin trip purpose, and destination trip purpose. This analysis included consideration of drive alone, shared ride with two passengers, and shared ride three or more passenger trips. Other non-passenger vehicle trips, including heavy-vehicles, were excluded. In addition, this analysis focused only on home-to-work and work-to-home trips to isolate employment-based VMT.

The distance between origins and destinations was determined by using the average of the single-occupancy vehicle (SOV) skim matrix for the AM and PM peak-periods. Before the VMT for each trip was calculated, each trip was first factored by vehicle occupancy. The VMT for each trip was calculated by multiplying the distance for each trip by the trip's occupancy factor. VMT per employee was then calculated by dividing the total VMT by number of trips. This process was completed for the entire SACOG region, as well as for the Master Plan Update and Cargo Facility. It should be noted that only trips internal to the SACOG region were included in this analysis due to the lack of information regarding trip lengths beyond the limits of the SACSIM model.

To determine the VMT related to airport passengers, the origin-destination trip matrices by select travel modes was used. The four time period trip tables (AM, midday, PM, and evening) were combined into a daily trip table and the drive alone, shared ride with 2 passengers, and shared ride 3 or more passenger matrices were used. Trips by TAZ to and from the airport TAZ were aggregated by travel mode. The average of the AM and PM skim distance was used to again calculate the distance to and from the airport TAZ. This distance was multiplied by the trips to and from the airport to calculate the VMT by TAZ. The VMT was then summed to calculate the airport VMT total.

As part of the analysis, passenger forecasts from SACSIM were normalized to match published forecast data provided by SMF using a factoring approach built on disaggregated output data from the SACSIM model. This normalization was accomplished by utilizing data obtained from a market assessment[6] commissioned by the Airport on the facility's existing and future demand. Based on this study, the number of existing annual passengers is estimated to be 6,031,630. Using this estimate, SACSIM estimates for average weekday daily passengers were then normalized and a factor for adjusting future year SACSIM model output was established. VMT for future year conditions was factored up consistent with the difference in annual passengers between the model estimates and market forecasts.

As indicated by the Airport it is understood that half of the forecasted growth of the Airport will include recapturing customers that are currently traveling to Bay Area airports. To determine the VMT associated with these existing passengers that are traveling to Bay Area airports, three airports were considered: Oakland International Airport (OAK), San Francisco International Airport (SFO), and San Jose International Airport (SJC). Using domestic travel as a proxy for all travel leakage as described in the catchment study[7], it was estimated that 56-percent of these trips would travel to SFO, 32-percent would travel to OAK, and 11-

[6] *SMF Aviation Forecast Update – Revised Preliminary Summary*. Reynolds, Smith & Hills. June 14, 2019.
[7] *SMF Catchment Area Analysis*. Campbell-Hill Aviation Group, LLC. April 2020.

percent would travel to SJC. Note that the catchment study only provides destination data for 87-percent of the market leakage, so for the purposes of analysis these airports were factored up to account for 100-percent based on the assumption that the other 13-percent would have been to airports even farther away. Based on these assumptions, distance was calculated between each TAZ in the model and the three airports before calculating the VMT by multiplying the distance, the share of out-of-region trips for each airport, and the share of total passenger trips for each TAZ. The VMT for each TAZ was totaled to determine the average VMT for each trip heading to one of the three Bay Area airports.

The VMT per passenger was calculated for both Base Year and Future Year Conditions by dividing the total VMT by the number of passengers. The VMT related to the growth of passengers due to the Master Plan Update was calculated by multiplying the difference in VMT per passenger between Base Year and Future Year Conditions by the growth of daily passengers. According to Airport staff, it is anticipated that 50-percent of the passenger growth is expected to be filled by passengers currently traveling to Bay Area airports. Therefore, the VMT reduction related to recapturing these passengers was calculated by first calculating the difference in VMT per passenger for the airport and the average VMT per passenger for the Bay Area airports, and then by multiplying this difference by half of the previously calculated passenger growth.

The overall VMT related to the Master Plan Update was determined by first calculating the additional employee related VMT by taking the difference between the VMT per employee for the airport and the VMT per employee for the SACOG region and multiplying it by the additional employees related to the passenger service expansion. The employee related VMT was then added to the additional passenger VMT before subtracting the VMT related to recapturing passengers currently traveling to the Bay Area airports.

VMT Analysis Results

Table 1 summarizes the findings of the total VMT, total home-based work (HBW) trips, and average home-based work (HBW) per employee VMT. As shown in Table 1, the average VMT per employee for the SACOG Region is 12.58 vehicle miles, while the average VMT per employee for the Airport and Cargo Facility is 20.52 and 22.59 vehicle miles, respectively. This result indicates ***a finding of significant impact for the proposed Cargo Facility for CEQA purposes***.

Table 1 – VMT per Employee Estimates

Location	Total VMT	Total HBW Trips	Average HBW VMT per Employee
SACOG Region	12,366,389	983,193	12.58
Master Plan Update Employees	24,005	1,170	20.52
Cargo Facility Employees	37,899	1,678	22.59

In addition to calculating the VMT per employee, the passenger-related VMT was also calculated. Table 2 summarizes the findings of the passenger-related VMT analysis for Existing (2020) and Future (2040) Conditions. As shown in Table 2, the number of daily passengers is expected to rise from 23,154 to 39,026 and the associated total daily VMT is expected to rise from 942,366 vehicle miles to 1,594,123 vehicle miles between Existing (2020) and Future (2040) Conditions. However, the VMT per passenger is only expected to rise from 40.70 vehicle miles per passenger to 40.85 vehicle miles per passenger.

Table 2 – VMT per Passenger Estimates

Time Period	Passengers	Total VMT	VMT per Passenger
Existing (2020)	23,154	942,366	40.70
Future (2040)	39,026	1,594,123	40.85

As noted previously, 50-percent of the growth of passengers is expected to be a recapture of passengers currently traveling to the Bay Area airports. As shown in **Table 3**, recapturing these employees results in a reduction of 64.2 VMT per passenger. When considering all passengers to be recaptured, 7,936 passengers of the total growth of 15,872 passengers, this calculation results in a daily VMT reduction of 509,500 vehicle miles. Therefore, when totaling the passenger and employee related VMT, including the expected VMT reduction, an overall VMT reduction of 486,941 daily VMT is expected for the proposed Master Plan Update and ***a finding of less than significant impact for CEQA purposes***.

Table 3 – Summary of VMT Analysis for the Airport Master Plan Update

Metric	VMT/ VMT per Passenger/ VMT per Employee
Additional VMT per Passenger[8]	0.15
Additional Passengers	15,872
VMT for Additional Passengers	**2,339**
Average Bay Area Airport VMT per Passenger	105.00
VMT Reduction for Recaptured Passengers	-64.20
Total Passengers Recaptured	7,936
Total VMT Reduction for	**-509,500**
VMT per Employee Increase	10.01
Total Additional Employees	2,020
Total Additional Employee Related VMT	**20,220**
Net Change in VMT due to Proposed Airport Master Plan Update	**-486,941**

Cargo Facility VMT Mitigation

Given that the Cargo Facility's Average HBW VMT per Employee is anticipated to result in a finding of significant impact, feasible VMT mitigation measures should be considered to reduce this impact. Considering the circumstances of this facility, the most appropriate and feasible measures for VMT mitigations will likely rely on Transportation Demand Management (TDM) options. Although the ultimate TDM options will need to be determined by the County in cooperation with the project applicant, the following provides discussion on the overall approach of TDM, as well as specific measures that may be appropriate for consideration.

TDM measures are programs that can be implemented to reduce single occupancy vehicle (SOV) travel to and from homes or places of work by offering travelers mode-choice options. The County's *General Plan* specifically supports TDM measures as described to reduce vehicle miles travelled and to reduce Green House Gas emissions, consistent with State goals. Specifically, *General Plan* Policy CI-40 states:

> "Whenever possible, the applicant/developer of new and infill development projects shall be conditioned to fund, implement, operate and/or participate in TSM programs to manage travel demand associated with the project."

[8] Difference between values documented Table 2.

Although there are several TDM options available for consideration, specific TDM measures that could be considered include:

- Managed Carpool Service
- Emergency Ride Home
- On-site TDM Program Manager/Coordinator and Marketing Materials
- Safe, Well-lit, and Accessible Pedestrian/Bicycle Facilities

A managed carpool service would connect drivers with riders, allowing employees of the Project the opportunity to carpool together or with other commuters in the Sacramento area. The project applicant could fund this benefit at no, or minimal cost to employees. More advanced services can also track bicycle trips and transit trips so that an employer can, in turn, track the staff's compliance with TDM measures.

An emergency ride home program is a service for which the project applicant would register and fund that would provide employees that commute to the project site using alternatives to SOVs the peace of mind of knowing that, if an emergency should occur and they are unable to take their alternative mode of travel home, a ride can be called at no charge to the employee. This service would typically be capped for each employee to a predetermined maximum number of rides per period (such as month, quarter, or year). The applicant could also provide funding to its staff for taxi or Uber/Lyft emergency trips instead.

TDM program coordinators encourage employees to sign up and utilize the available TDM resources and benefits provided by the project applicant using often onsite and electronic marketing/informational materials. A program coordinator can also track compliance with TDM measures for the purposes of mitigation monitoring if required by the County.

The project will be required to contribute to constructing off-site pedestrian and bike facility improvements along roadways discussed in detail in other sections of this report. These active transportation improvements are anticipated to provide benefits and connectivity to employees that wish to travel to/from the site on foot, from transit facilities or by bicycle. These improvements will fill system gaps and improve the local sidewalk and bicycle network in this area of the County.

In addition to the approaches discussed above, another option for mitigating VMT includes establishing or joining a Transportation Systems Management Association (TMA). In close proximity to the proposed Cargo Facility, developments within Metro Air Park are required to join the Metro Air Park TMA to help mitigate VMT impacts. The Cargo Facility could establish its own TMA consistent with the Metro Air Park TMA or join the Metro Air Park TMA to help mitigate its VMT impacts. In both cases, the TMA would be funded by a non-revocable funding mechanism such as a Community Facilities District or a County Service Area.

LOCAL ACCESS, SAFETY, AND CIRCULATION STUDY

Study Facilities

The following is a summary of the study facilities included in this traffic study, all of which are depicted in **Figure 1** (Study Area Intersection and Roadway Segments), **Figure 2** (SR-99 Freeway Study Facilities), and **Figure 3** (I-5 Freeway Study Facilities).

Intersections

Table 4 presents the intersections incorporated in this study, including which intersections are analyzed under each proposed project scenario.

Table 4 – Study Intersections

	Intersection	MPU	Cargo
1	Elverta Road @ Garden Highway		X
2	Elverta Road @ Earhart Drive		X
3	Elverta Road @ Power Line Road		X
4	Elverta Road @ Metro Air Parkway		X
5	Elverta Road @ Lone Tree Road (Cumulative Only)		X
6	Elverta Road @ SR-99 Southbound Ramps		X
7	Elverta Road @ SR-99 Northbound Ramps		X
8	Elkhorn Boulevard @ Power Line Road	X	
9	Elkhorn Boulevard @ Metro Air Parkway	X	X
10	Elkhorn Boulevard @ Lone Tree Road (Cumulative Only)	X	
11	Elkhorn Boulevard @ SR-99 Southbound Ramps	X	
12	Elkhorn Boulevard @ SR-99 Northbound Ramps	X	
13	Airport Boulevard @ I-5 Northbound Ramps	X	
14	Airport Boulevard @ I-5 Southbound Ramps	X	
15	Power Line Road @ Road A (Cumulative Only)		X
16	Power Line Road @ Road D (Cumulative Only)		X
17	Power Line Road @ Skyking Road		X
18	Metro Air Parkway @ Road A (Cumulative Only)		X
19	Metro Air Parkway @ Road D (Cumulative Only)		X
20	Metro Air Parkway @ Skyking Road		X
21	Metro Air Parkway @ Meister Way (Cumulative Only)		X
22	Metro Air Parkway @ I-5 Northbound Ramps (Cumulative Only)		X
23	Metro Air Parkway @ I-5 Southbound Ramps (Cumulative Only)		X

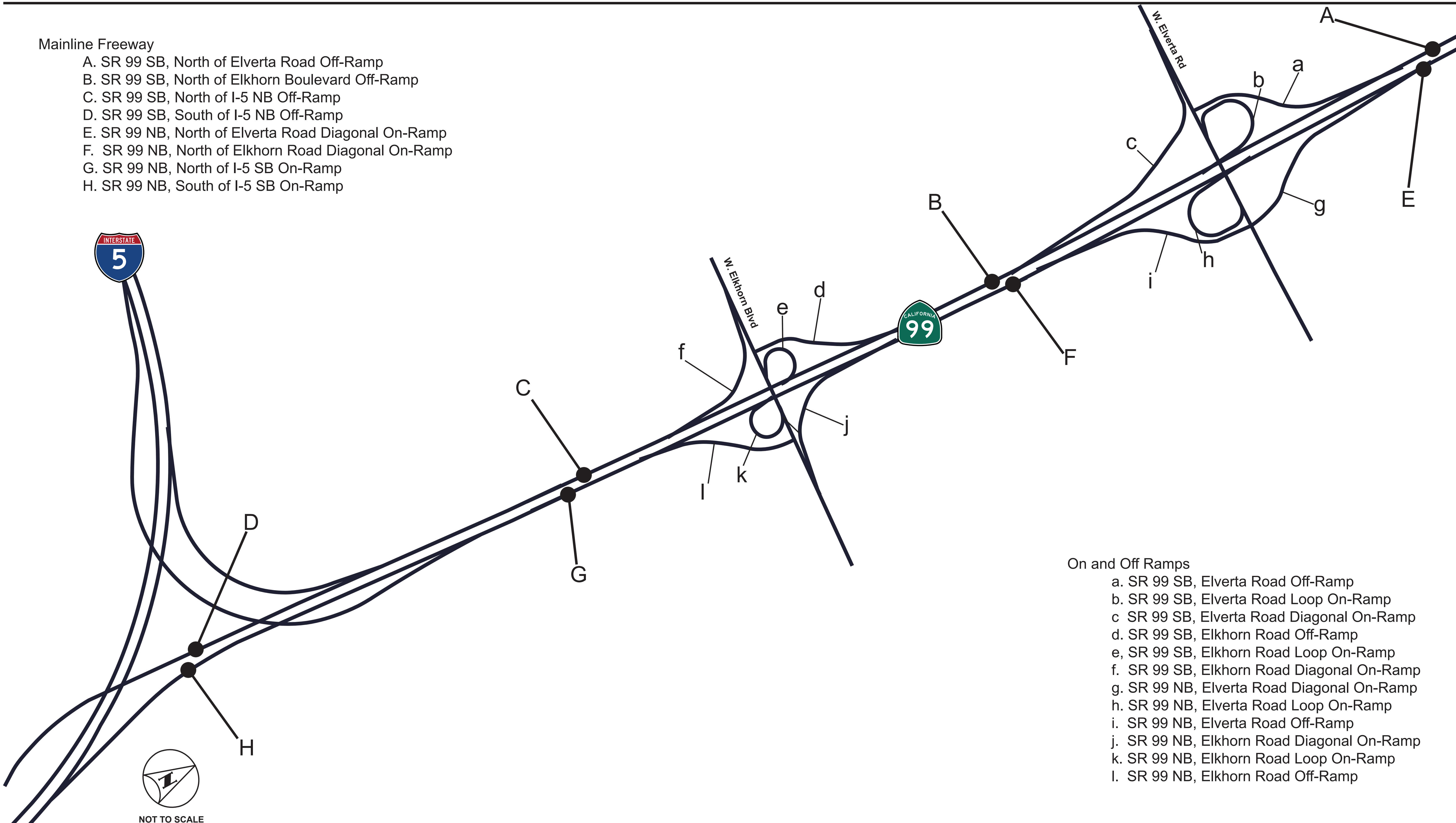


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Figure 2
SR 99 Freeway Study Facilities

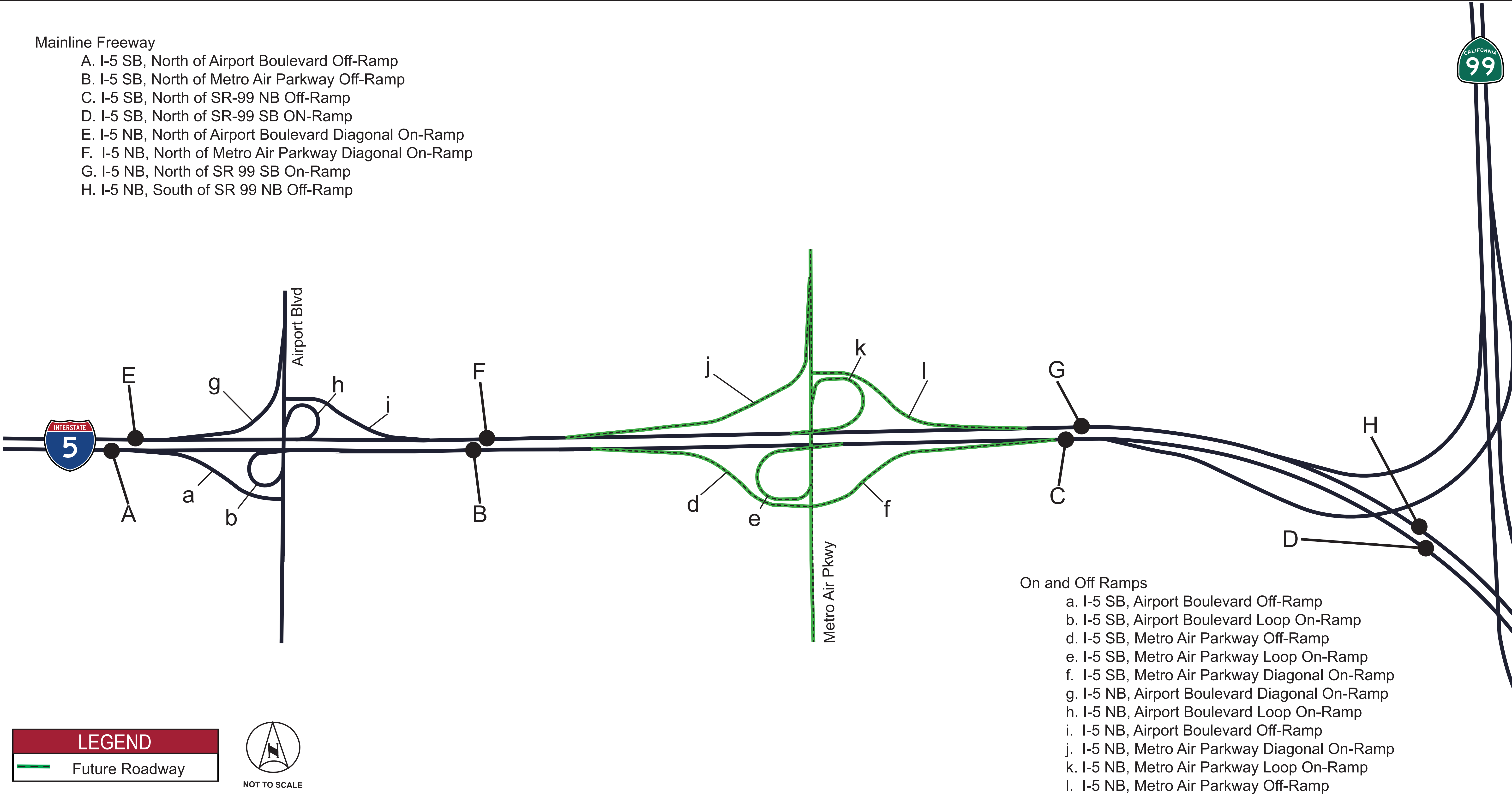


Figure 3
I-5 Freeway Study Facilities

Roadway Segments

Table 5 presents the roadway segments incorporated in this study, including which segments were analyzed for rural roadway functionality.

Table 5 – Study Roadway Segments

	Segment	LOS	Rural Roadway Functionality
1	Elverta Road, Garden Highway to Earhart Drive	X	X
2	Elverta Road, Earhart Drive to Power Line Road	X	X
3	Elverta Road, Power Line Road to Metro Air Parkway	X	X
4	Elverta Road, Metro Air Parkway to Lone Tree Road	X	X
5	Elverta Road, Lone Tree Road to SR-99	X	X
6	Power Line Road, Elverta Road to Road A	X	X
7	Power Line Road, Road A to Road D	X	X
8	Power Line Road, Road D to Skyking Road	X	X
9	Power Line Road, Skyking Road to Elkhorn Boulevard	X	
10	Metro Air Parkway, Elverta Road to Road A	X	
11	Metro Air Parkway, Road A to Road D	X	
12	Metro Air Parkway, Road D to Skyking Road	X	
13	Metro Air Parkway, Skyking Road to Elkhorn Boulevard	X	
14	Metro Air Parkway, Elkhorn Boulevard to Meister Way	X	
15	Metro Air Parkway, Meister Way to I-5	X	

Freeway Facilities

The following freeway facilities are included in the study, per the county-provided scope of study (as shown in **Figure 2** and **Figure 3**).

- SR-99 North of Elverta Road (basic segments, merge/diverge/weave)
- SR-99 South of Elverta Road (basic segments, merge/diverge/weave)
- SR-99 South of Elkhorn Boulevard (basic segments, merge/diverge/weave)
- I-5 North of Airport Boulevard (basic segments, merge/diverge/weave)
- I-5 South of Airport Boulevard (basic segments, merge/diverge/weave)
- I-5 South of Metro Air Parkway (basic segments, merge/diverge/weave)
- I-5 South of SR-99 (basic segments, merge/diverge/weave)

Assessment of Proposed Project

In an effort to inform the required roadway segment and intersection configurations necessary to accommodate the Proposed Project, a weekday AM and PM peak-hour access, safety, and circulation analysis was completed. This analysis includes a Level of Service (LOS) analysis for the following scenarios:

- Existing (2020) Conditions
- Existing (2020) plus Proposed Project (Master Plan Update) Conditions
- Existing (2020) plus Proposed Project (Cargo Facility) Conditions
- Existing (2020) plus Proposed Project (Master Plan Update and Cargo Facility) Conditions
- Cumulative Conditions+
- Cumulative plus Proposed Project (Master Plan Update) Conditions
- Cumulative plus Proposed Project (Cargo Facility) Conditions
- Cumulative plus Proposed Project (Master Plan Update and Cargo Facility) Conditions

+ *Scenario established using the Metro Air Park SPA version of SACOG's SACMET model.*

Traffic Modeling

For purposes of this study, "cumulative" is defined as the time in which the area surrounding Metro Air Parkway is fully built out as reflected in the land use assumptions for the Metro Air Park Special Planning Area (SPA). This planning horizon is not intended to be comprehensive and inclusive of all potential development within the County, but provides a focused understanding of the anticipated development of the land uses surrounding the project site.

Traffic forecasting was conducted using the Metro Air Park SPA version of SACOG's SACMET (Metro Air Park (MAP) model) model for Cumulative No Project Conditions (all MAP SPA land uses are included, but no growth for the Airport or Cargo Facility). This model provides the baseline to which project volumes from the Airport and Cargo Facility from SACOG's latest version of the SACSIM model (SACSIM15) were added to the volumes from the MAP Model for the plus project scenarios. In effect, due to the limitations of SACMET with regards to airport passenger trips, the vehicle trips related to the Airport and Cargo Facility were layered on to the volumes from the MAP model to develop analysis volumes for all Cumulative plus Proposed Project scenarios. As a part of this effort, the Traffic Analysis Zone (TAZ) structure and roadway network in SACSIM15 were refined in the vicinity of the Airport and Cargo Facility to provide more detailed results related to the forecasting of major roadways both within and immediately adjacent to the Airport.

The following model assumptions were used for this study:

- The commercial development along the Elkhorn Boulevard Extension was included for all Cumulative scenarios (No Project, MPU, Cargo Facility, and MPU plus Cargo Facility)
    - Converted developable acres (51.9 acres) to square feet using a FAR of 0.2 (452,153-sf)
    - Used the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 10th Edition* to convert square feet to employees based on the ratio of daily trip generation rates for Land Use 820 (Shopping Center), resulting in 904.2 employees
    - Based on existing commercial areas, split employment across Food (226.0), Office (90.4), Retail (497.4), Service (45.2) and Industrial (45.2) jobs
- Used the average head count per shift (3 shifts per day) for the Cargo Facility (1,105) to convert into total daily employment (3,315)
    - Split employment across Office (232.0), Other (99.5), and Industrial (2983.5) employment categories based on other industrial/warehousing employment areas
- Did not modify the passenger trip generation rates or employment at the Airport Cumulative Conditions as several sensitivity analyses showed that attempting to increase passenger trips within the model had negative effects across the region.
    - In addition, it was assumed that the employment within the model accurately represented current employment and passenger conditions
- Passenger and Employment growth at the airport was determined by performing select zone analyses at airport.
    - The employment was split from the TAZ representing the Airport to be able to track passenger and employment trips separately
    - The volume of passenger trips and employment trips at each study facility (intersection, roadway segment, and freeway facility) was tracked and grown according to the calculated 20-year annual growth based on the market forecast commissioned by the airport:
        - 2018: 6,031,630; 2038: 10,166,400; Total Growth: 68.55-percent
- No land use south of I-5 was modified
- Difference method was used to determine volumes at all study facilities for every scenario except Existing No Project
- The roadway network surrounding the airport was modified slightly within the model to make it more representative of the existing roadway network with an emphasis on the Crossfield Drive/Aviation Drive intersections

The LOS analyses were completed for the study area intersections, roadway segments, and freeway facilities. LOS was determined for 2020 and Cumulative based on the analysis scenarios listed above.

Traffic Assessment Methodology

Level of Service Definitions

Analysis of transportation facility significant operational performance is based on the concept of Level of Service (LOS). The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual (HCM), 6th Edition*.

Intersection Analysis

The study intersections were evaluated using the Caltrans District 3 approved version of the Synchro software Version 10. Peak hour delay and level of service were calculated for each intersection consistent with *Highway Capacity Manual (HCM)* analysis procedures. **Table 6** presents intersection LOS definitions as defined in the HCM.

Table 6 – Intersection Level of Service Criteria

Level of Service (LOS)	Un-Signalized	Signalized
	Average Control Delay* (sec/veh)	Average Control Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Source: Highway Capacity Manual, 6th Edition
* Applied to the worst lane/lane group(s) for SSSC

Roadway Segment Analysis

The roadway segment analysis was performed in accordance with the County's guidelines[9].

Table 7 – Roadway Segment Level of Service Thresholds

Roadway Classification	LOS A	LOS B	LOS C	LOS D	LOS E
2-Lane Arterial (Moderate Access Control)	10,800	12,600	14,400	16,200	18,000
6-Lane Arterial (Moderate Access Control)	32,400	37,800	43,200	48,600	54,000
4-Lane Arterial (High Access Control)	24,000	28,000	32,000	36,000	40,000
2-Lane Rural Road, 24' of pavement, 6' paved shoulders	2,200	4,300	7,100	12,200	20,000
Rural, 2-lane Road, 24'-36' of pavement, No Shoulders	1,000	2,100	3,400	6,000	12,800

Source: Sacramento County Traffic Analysis Guidelines (July 2020)

Rural Roadway Functionality

The analysis of the functionality of rural roads includes review of impacts to identified substandard roadways. A substandard roadway is defined as having either travel lanes less than 12-feet in width or

[9] *Traffic Analysis Guidelines*, Sacramento County, July 2020.

paved shoulders less than 6-feet in width. Impact to substandard roadways is defined in one of two ways:

- If a proposed project increases the substandard rural roadway average daily traffic (ADT) volume above 6,000 daily vehicles
- If a proposed project adds 600 or more new daily vehicles to a substandard roadway that already carried 6,000 or more daily vehicles

Freeway Facility Analysis

Caltrans' traffic study guidelines[10] specify the use of vehicle density (passenger cars/mile/lane) as the appropriate measure of effectiveness for freeway facilities. The LOS criteria for basic freeway segments and freeway merge/diverge segments are summarized in **Table 8**. We understand that Caltrans District 3 prefers weaving sections to be analyzed using the Leisch Method[11]. As such, the freeway weaving sections in this study are evaluated using this methodology.

Table 8 – Freeway Facility Level of Service Criteria

Level of Service (LOS)	Basic Segments Density (pc/mi/ln)	Merge/Diverge Segments Density (pc/mi/ln)
A	≤ 11	≤ 10
B	> 11 – 18	> 10 – 20
C	> 18 – 26	> 20 – 28
D	> 26 – 35	> 28 – 35
E	> 35 – 45	> 35
F*	> 45*	*

Source: *Highway Capacity Manual, 6th Edition*
* Demand exceeds capacity

Signal Warrants

The evaluation of the need for traffic signalization was based on the peak-hour warrant methodologies noted in the current, published edition of the *California Manual on Uniform Traffic Control Devices (CMUTCD)*.

Queuing

Vehicle queuing was evaluated for the AM and PM peak-hours for the following locations:

- All freeway ramp terminals
- Existing and future proposed turn pockets where the project is expected to increase turning movement volumes

Queuing for these locations was approximated using the *Synchro* computer software. 95th percentile vehicle queues were compared against available vehicle storage lengths to determine if the queues are anticipated to exceed their available storage and adversely affect adjacent through travel lanes.

[10] *Guide for the Preparation of Traffic Impact Studies*, Caltrans, December 2002.
[11] *Procedure for Analysis and Design of Weaving Sections,* Federal Highway Administration, February 1984

Access and Safety Evaluation

Cargo Facility Access

As discussed above, the cargo facility is a separate and distinct project component. Accordingly, the evaluation of the facility requires consideration of its unique access, staffing/shift change pattern, and overall operating dynamics. Based on coordination with the project applicant, the follow are the primary parameters upon which the evaluation of this project components is based:

- All access is concentrated at the Elverta Road intersection with Earhart Drive (Intersection #2).
- Three (3), equally staffed shifts are anticipated throughout the typical day:
  - 05:00 – 13:00
  - 13:00 – 21:00
  - 21:00 – 05:00
- Although the shift-change time periods are located outside the traditional peak-hours (07:00 – 09:00 and 16:00 – 18:00) which are the focus of the operations analyses contained herein, it was important to size this point of access (Study Intersection #2) based on the facility's unique recurring peak-period operations.
- Each shift will employ up to 1,500 employees. Each shift will have a 30-minute staggered start time allowing the total number of employees to be split, essentially divided equally across the two, 30-minute periods preceding each shift starting time.
  - As an example, for the shift that starts at 05:00, 750 employees would arrive for a 04:30 start time and 750 employees would arrive for a 05:00 start time.
  - In this example, the corresponding departing employees would also be staggered by 30-minutes on the outbound side of the operations.
- Although understood to represent a meaningful proportion of the facility's overall functionality and operations, truck trips are assumed to occur more evenly throughout the typical day and will not be concentrated within the established shift change periods. As such, these truck trips (estimated to be up to 310 daily trips) are not assumed to impact the focused access evaluation for the Elverta Road intersection with Earhart Drive (Intersection #2).

Based on this defined routine and predictable operation for the cargo facility, the evaluation of the Elverta Road intersection with Earhart Drive (Intersection #2) incorporated the following analysis parameters:

- Conservatively includes overlapping 750 entering and 750 exiting employees during the same analysis period.
- Applies conservative Peak-Hour Factors (PHF) that account for the peaking dynamics described above:
  - 0.50 for the westbound left (entering) and northbound right (exiting)
  - 0.70 for all other movements
- A 4-percent heavy-vehicle factor for the westbound left (entering) and northbound right (exiting) movements. All other movements were assumed to be 2-percent.

The existing (2020) lane configuration at each of the study area intersection is provided in **Figure 4** and **Figure 5**. The existing (2020) peak hour traffic volumes are provided in **Figure 6** and **Figure 7**.

The cumulative lane configuration at each of the study area intersection is provided in **Figure 8** and **Figure 9**. The cumulative peak hour traffic volumes are provided in **Figure 10** and **Figure 11**.

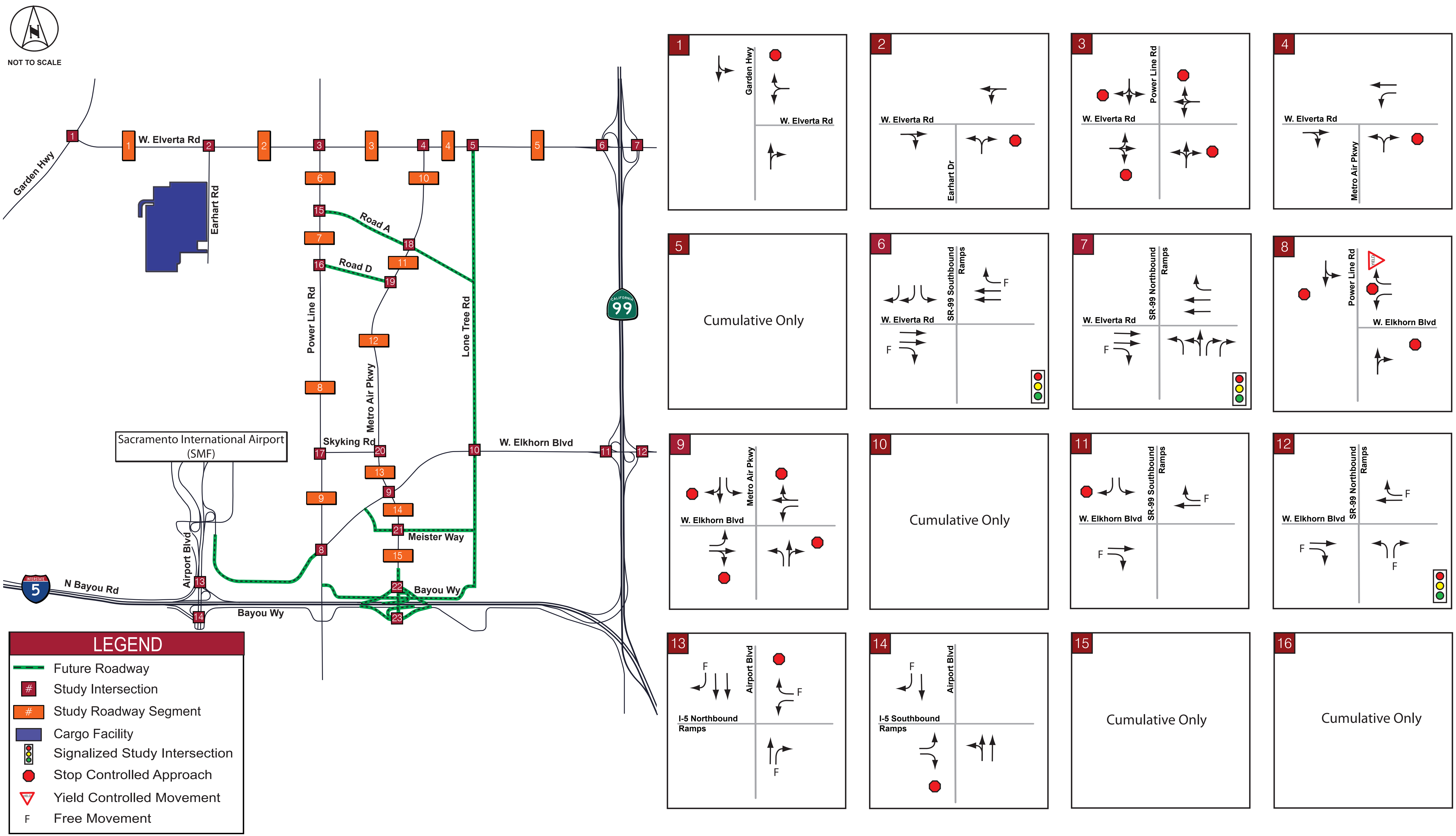


Figure 4

Existing Lane Configuration (Intersections 1-16)

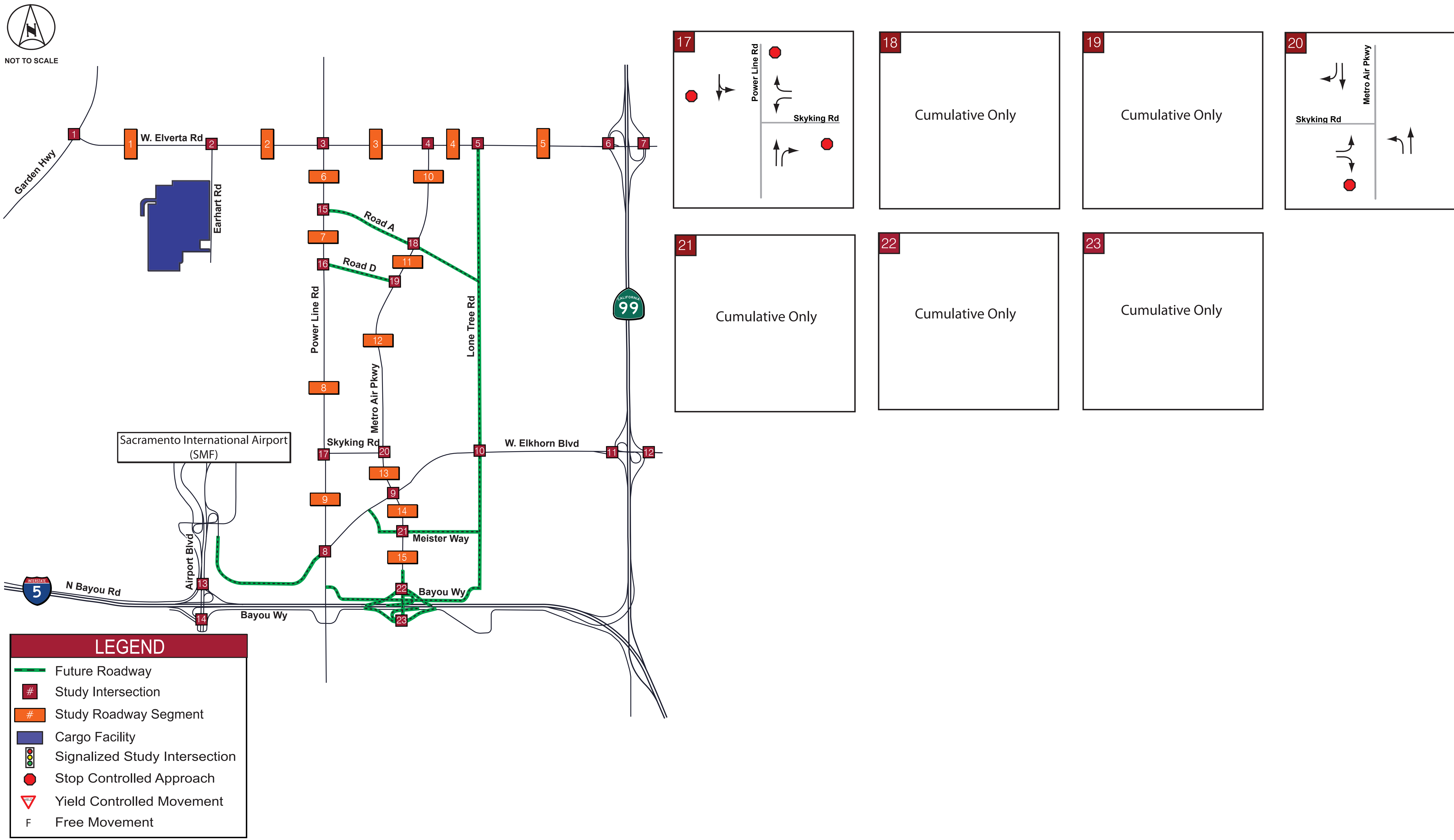


Figure 5

Existing Lane Configuration (Intersections 17-23)

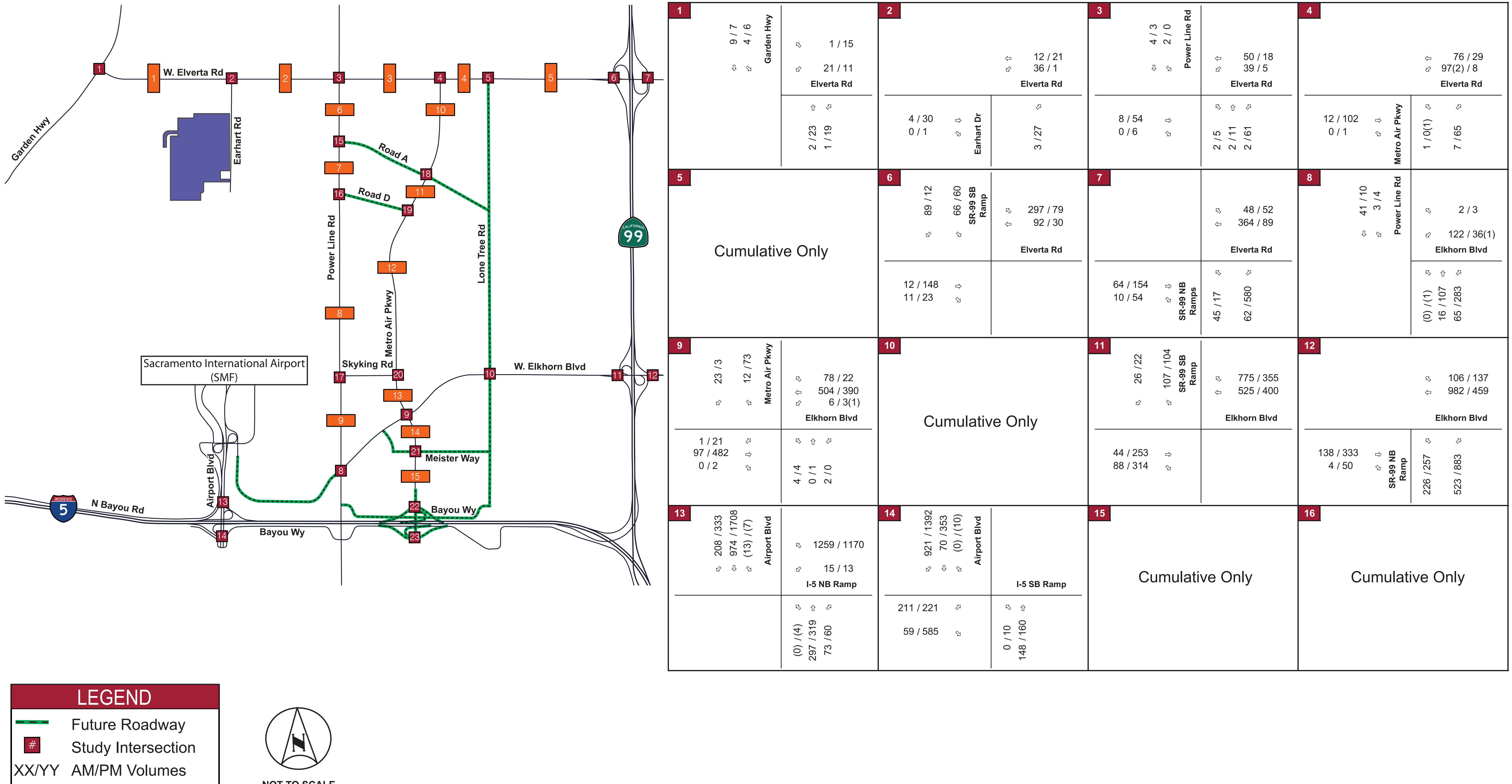
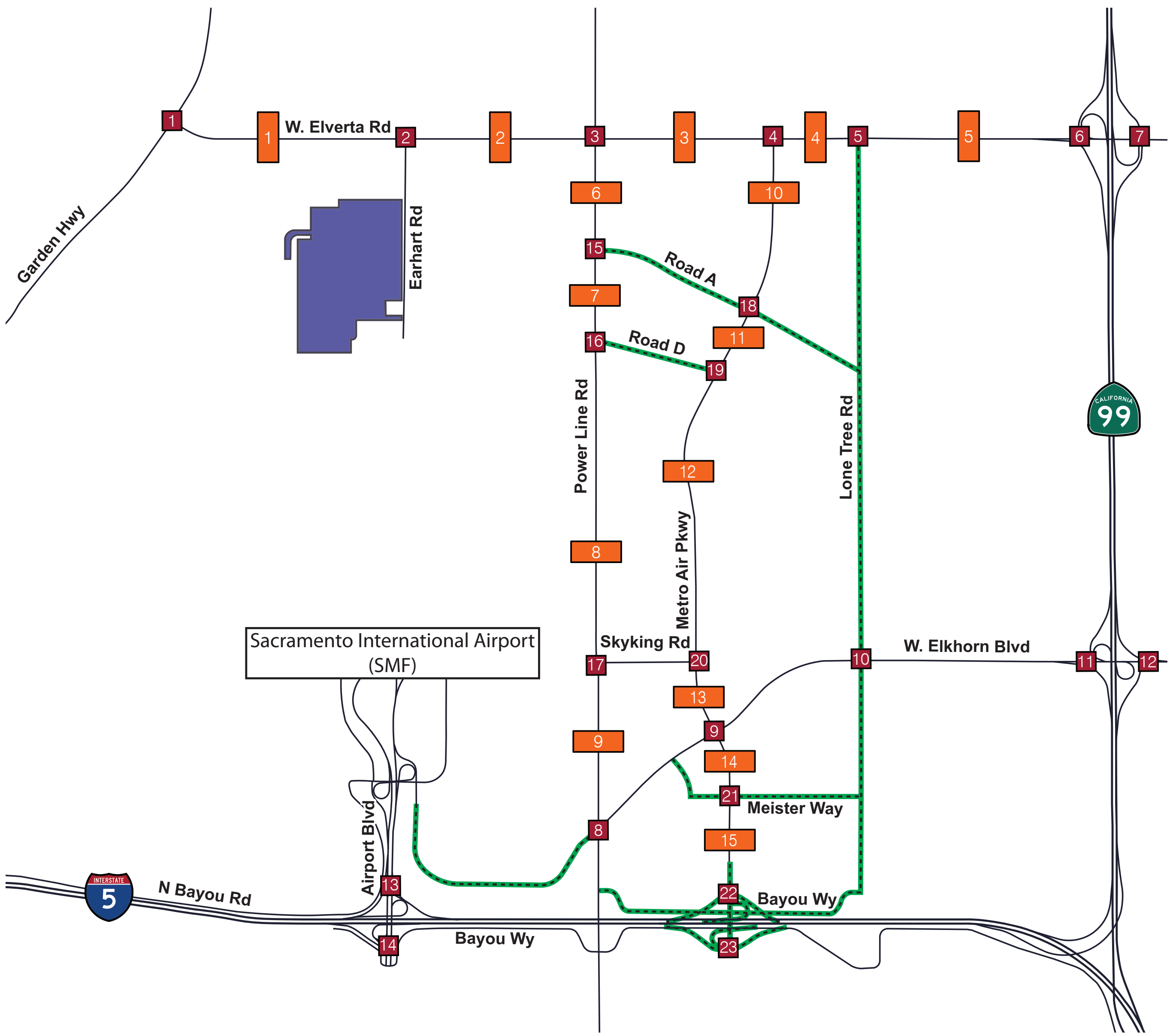
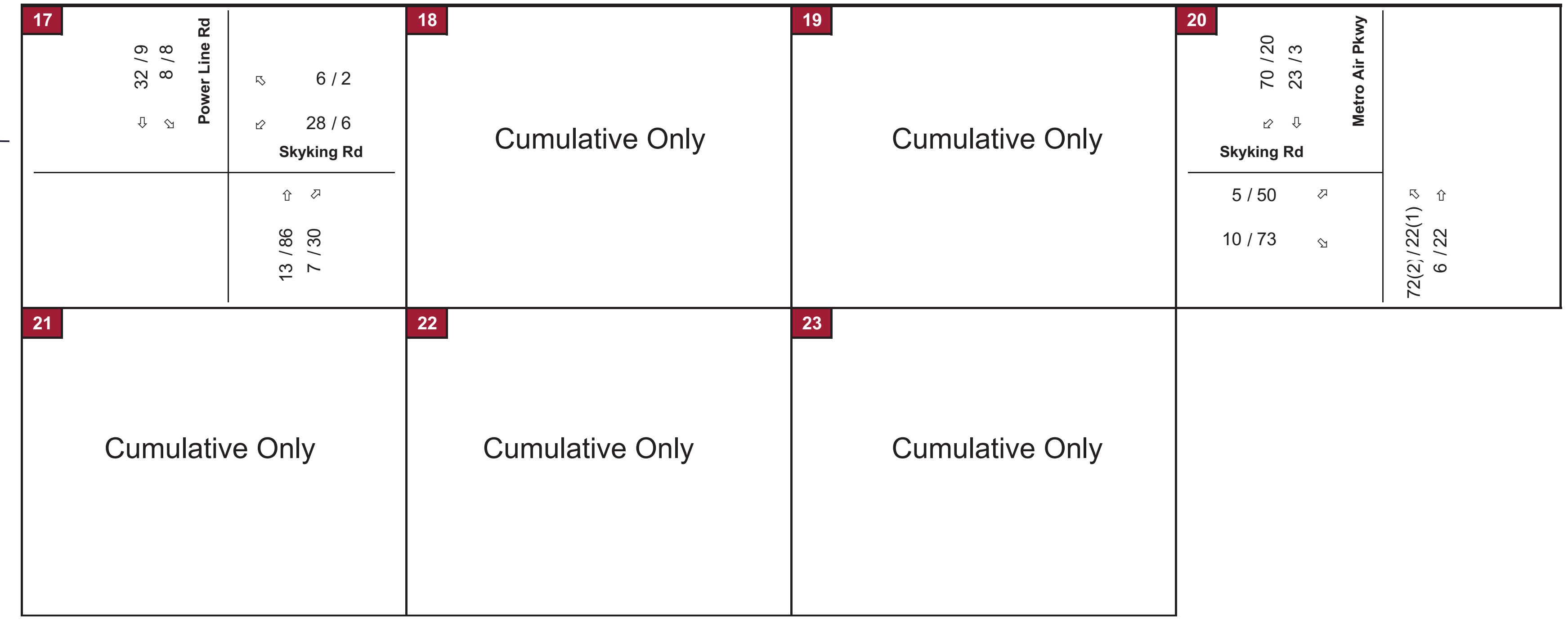


Figure 6
Existing (2020) Peak Hour Traffic Volumes
Intersections 1-16





LEGEND

- Future Roadway
- # Study Intersection
- XX/YY AM/PM Volumes
- (ZZ) U-turn Volumes

NOT TO SCALE

Figure 7
Existing (2020) Peak Hour Traffic Volumes
Intersections 17-23

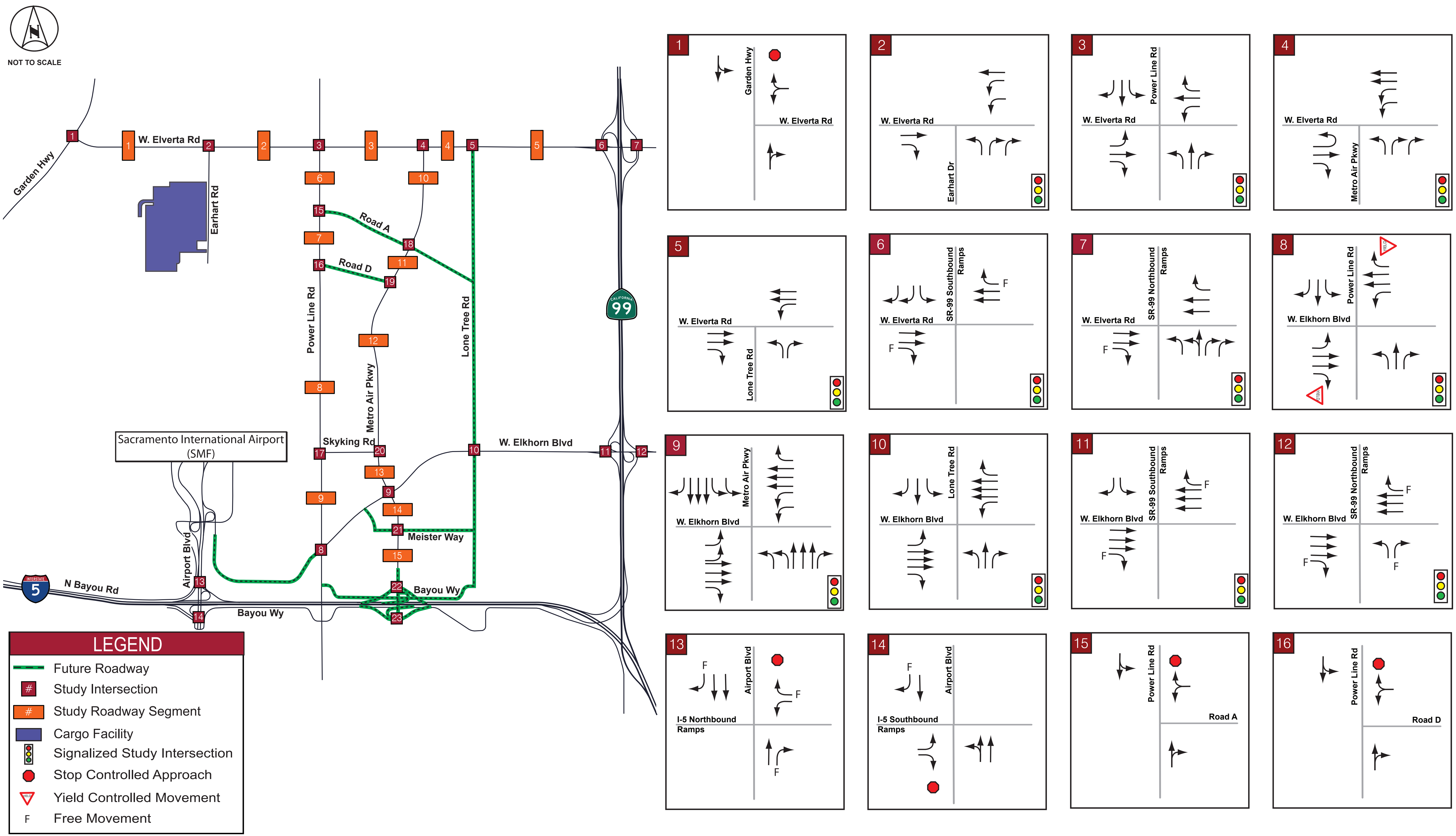


Figure 8

Cumulative Lane Configuration (Intersections 1-16)

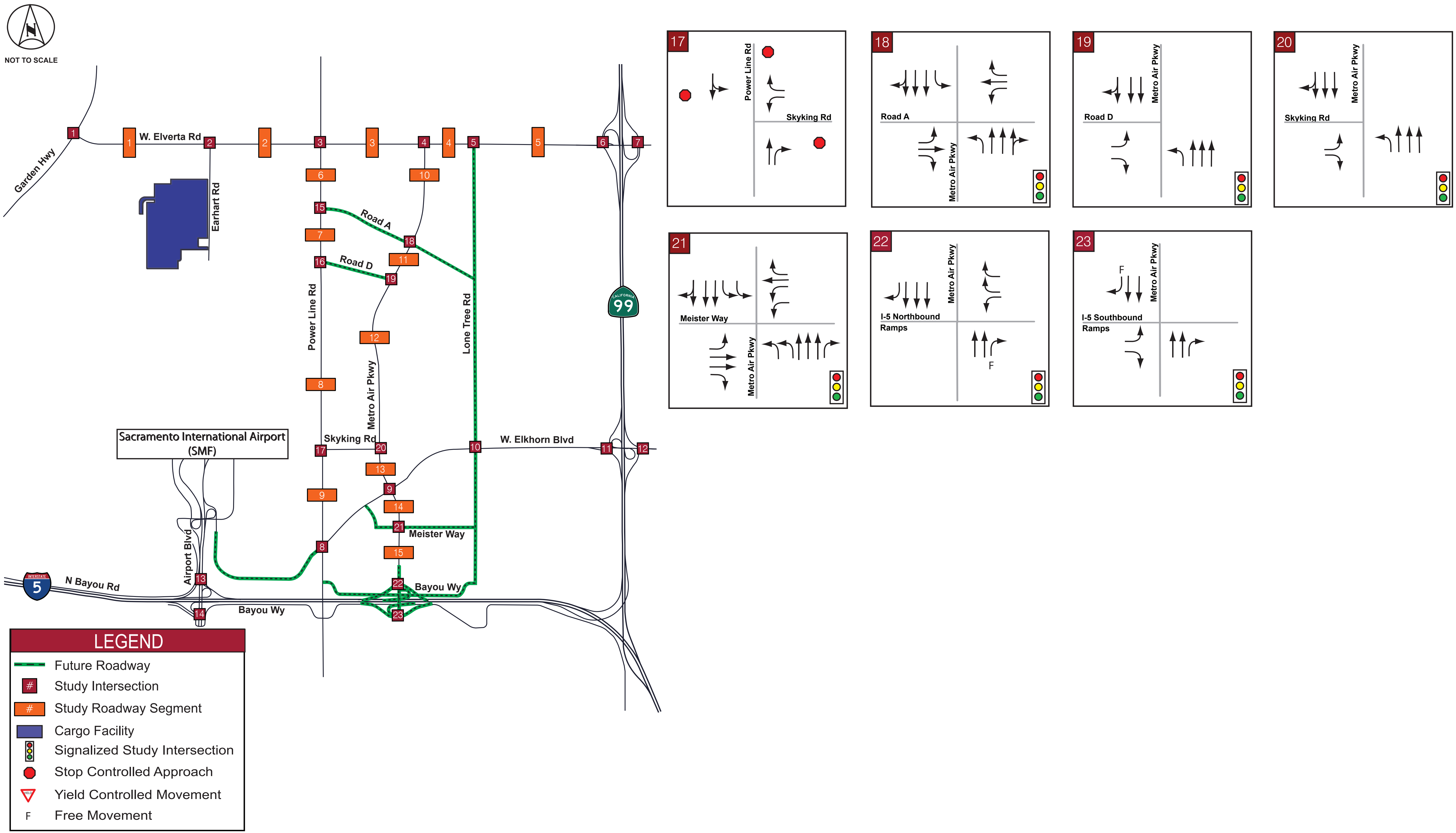


Figure 9

Cumulative Lane Configuration (Intersections 17-23)

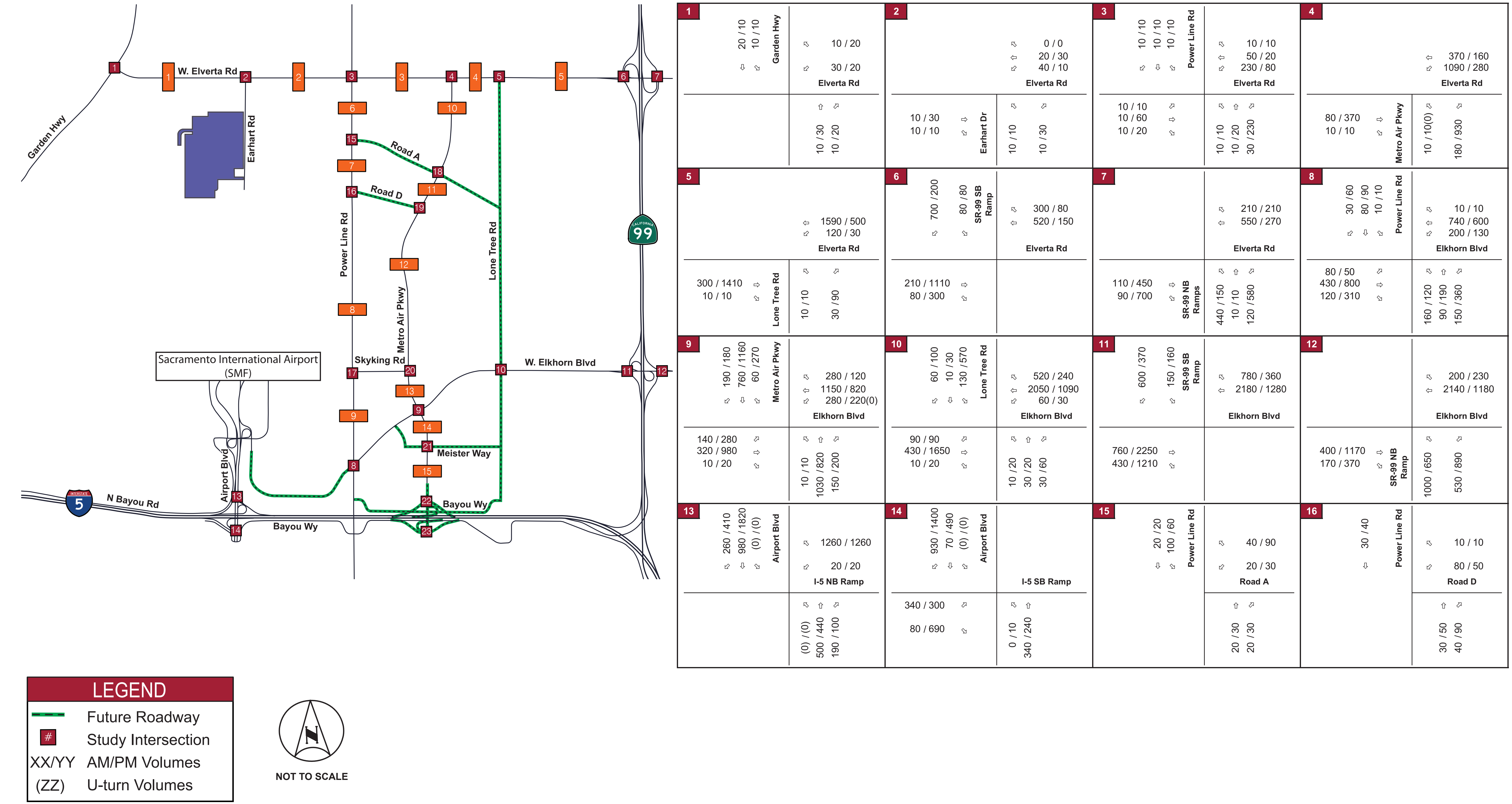


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Figure 10
Cumulative Peak Hour Traffic Volumes
Intersections 1-16

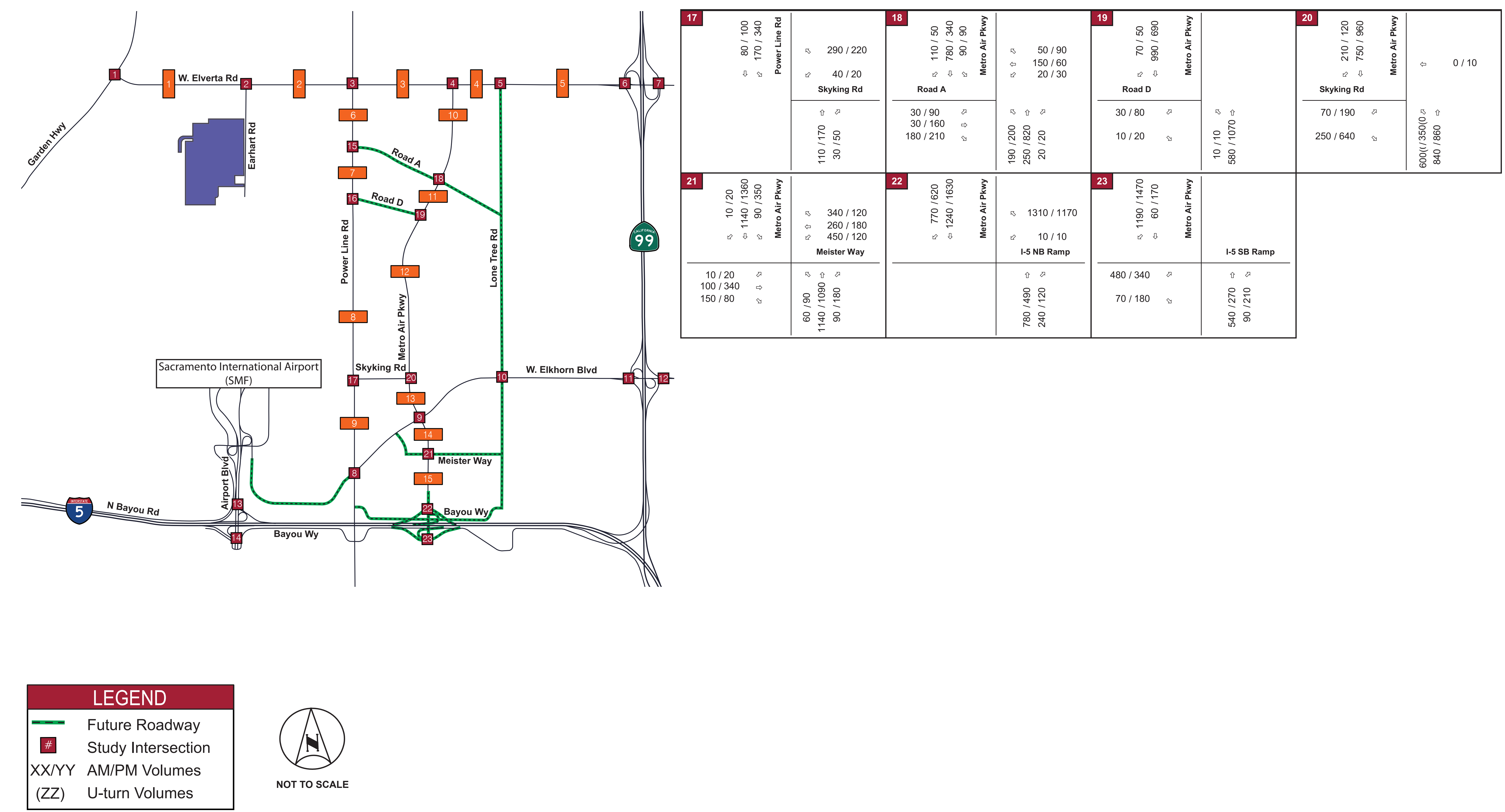


Figure 11
Cumulative Peak Hour Traffic Volumes
Intersections 17-23

Safety Evaluation

Based on the collision data provided by the County and as shown in **Table 9**, the calculated collision rate on Elverta Road (within the general project limits) is nearly two times the statewide rate for similar facilities.

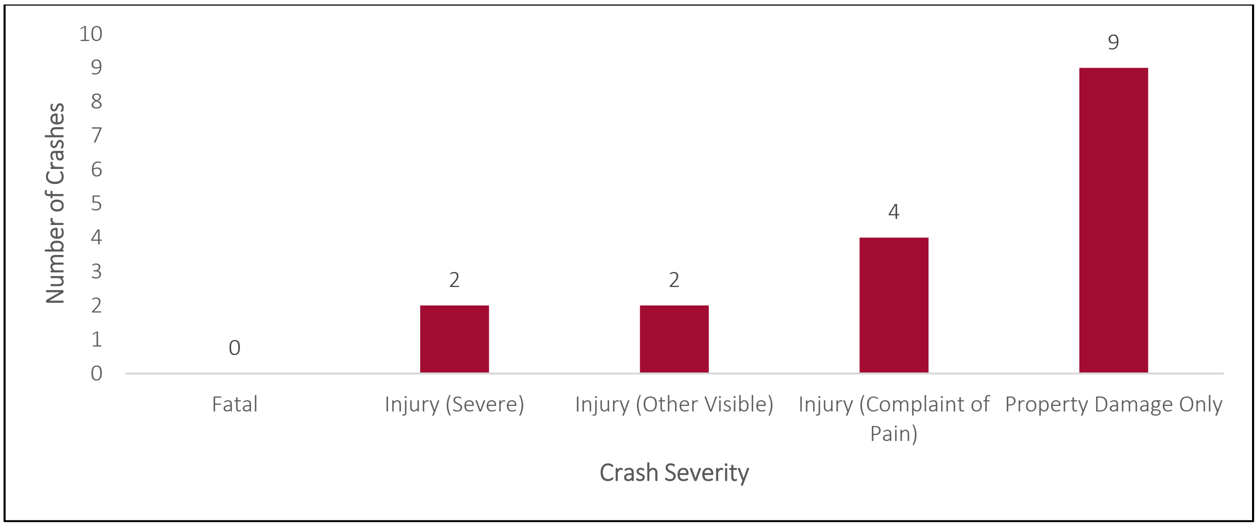
Table 9 – Elverta Road Crash Data Summary

Road Segment (project limits only)	Total Collisions in 5 years	Calculated Collision Rate (ACC/MVM)	Statewide Rate* (ACC/MVM)
Elverta Road	17	2.06	1.11

Notes: ACC/MVM = Accidents per Million Vehicle Miles
*Per *2016 Collision Data on California State Highways*, Urban 2 and 3 LN

As shown in **Figure 12**, of the 17 crashes that have occurred in the most recent five-year period resulted in no fatalities and approximately half of the crashes resulted in property damage only.

Figure 12 – Elverta Road Crash Severity Distribution



Per the Federal Highway Administration's (FHWA) Crash Modification Factor (CMF) Clearinghouse website[12], the following anticipated and recommended improvements along Elverta Road are anticipated to reduce the predicted number and severity of crashes (the lower the CMF, the larger the impact on reducing anticipated crashes):

- Widen shoulder (CMFs range from 0.5 to 0.82)
- Install an additional lane (CMFs range from 0.74 to 0.76)
- Install left turn lane (CMFs range from 0.57 to 0.92)
- Install right turn lane (CMFs range from 0.77 to 0.91)
- Install traffic signal (CMF of 0.56 for all crashes and 0.23 for angle crashes, while 1.15 for rear-end crashes)

Traffic counts collected at the intersection of West Elverta Road with SR-99 Southbound Ramps (Intersection #6) indicated drivers were performing prohibited westbound left-turns. Implementing safety measures such as flexible delineators are recommended at Intersection #6 to address the observation of prohibited westbound left-turn movements at Intersection #6.

[12] *www.cmfclearinghouse.org*

The recommendations included with the proposed projects (MPU and Cargo Facility), as well as the Sacramento County *General Plan* roadway capacity projects, are anticipated to decrease the frequency of severe crashes resulting from improved roadway geometry, including paved shoulders, right- and left-turn lanes, intersection signalization, etc.

Intersection Analysis Results

LOS for each scenario was determined using methods defined in the *Highway Capacity Manual,* using appropriate traffic analysis software (Synchro®) and analysis procedures consistent with the County's current, published *TIS Guidelines*[9]. The intersection capacity analysis conducted for each of the analysis scenarios resulted in LOS and turn lane storage queueing recommendations as described in the following sections.

The method of intersection control is listed as "Signal" for a signalized intersection, "AWSC" for an all-way stop-controlled intersection, and "SSSC" for a side-street stop-controlled intersection. The overall level of service is reported for signalized intersections and all-way stop-controlled intersections. However, per HCM methodology, only the worst movement is reported for SSSC intersections.

The existing conditions analysis used the lane configurations presented in Figure 4 and the peak hour traffic volumes associated with each analysis scenario as follows:

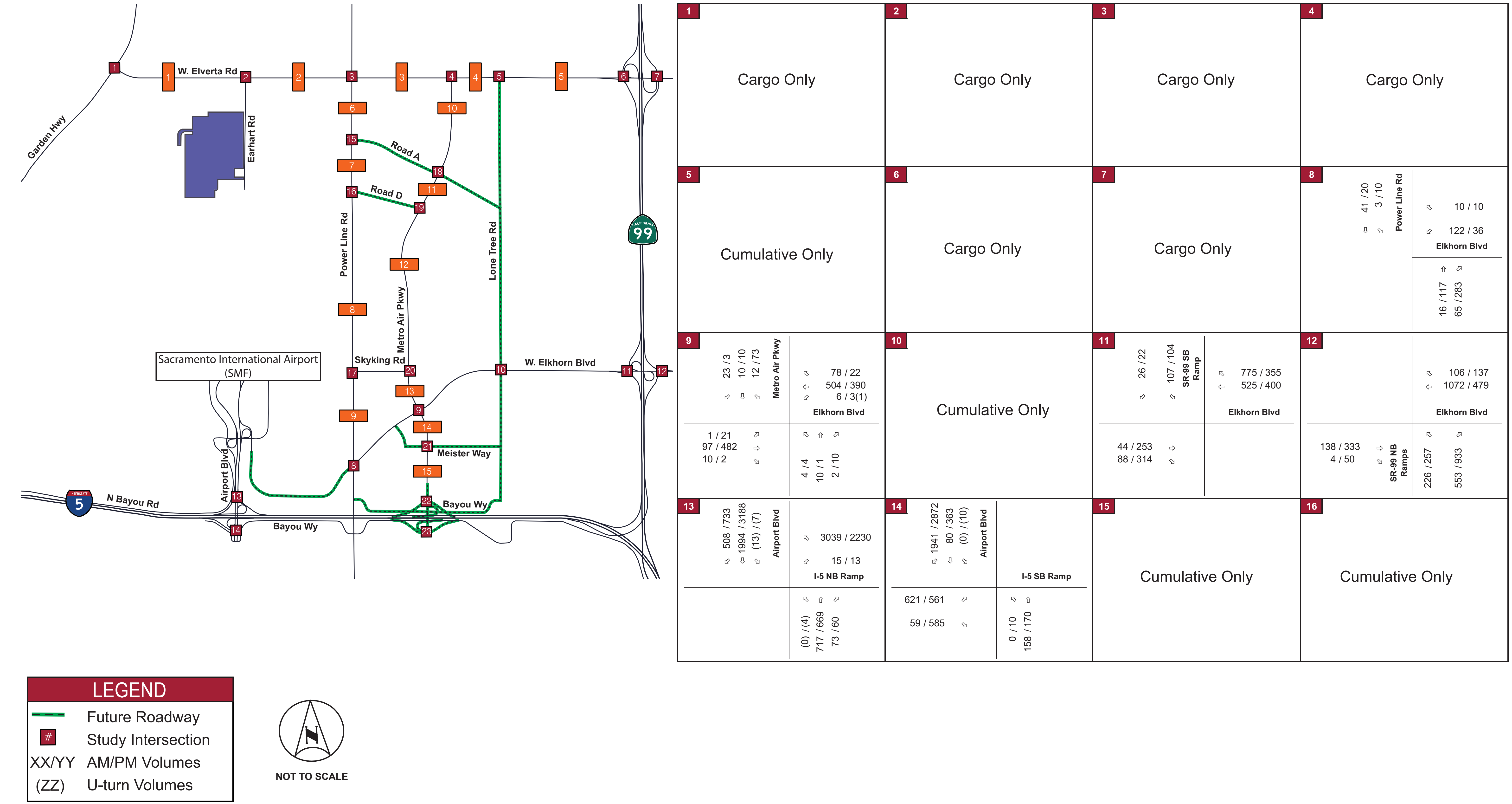
- Existing (2020) - Figure 6 and Figure 7
- Existing (2020) Plus MPU - Figure 13 and Figure 14
- Existing (2020) Plus Cargo - Figure 15 and Figure 16
- Existing (2020) Plus MPU Plus Cargo - Figure 17 and Figure 18

The cumulative analysis used the lane configurations presented in Figure 8 and Figure 9 and the peak hour traffic volumes associated with each analysis scenario as follows:

- Cumulative - Figure 10 and Figure 11
- Cumulative Plus MPU - Figure 19 and Figure 20
- Cumulative Plus Cargo - Figure 21 and Figure 22
- Cumulative Plus MPU Plus Cargo - Figure 23 and Figure 24

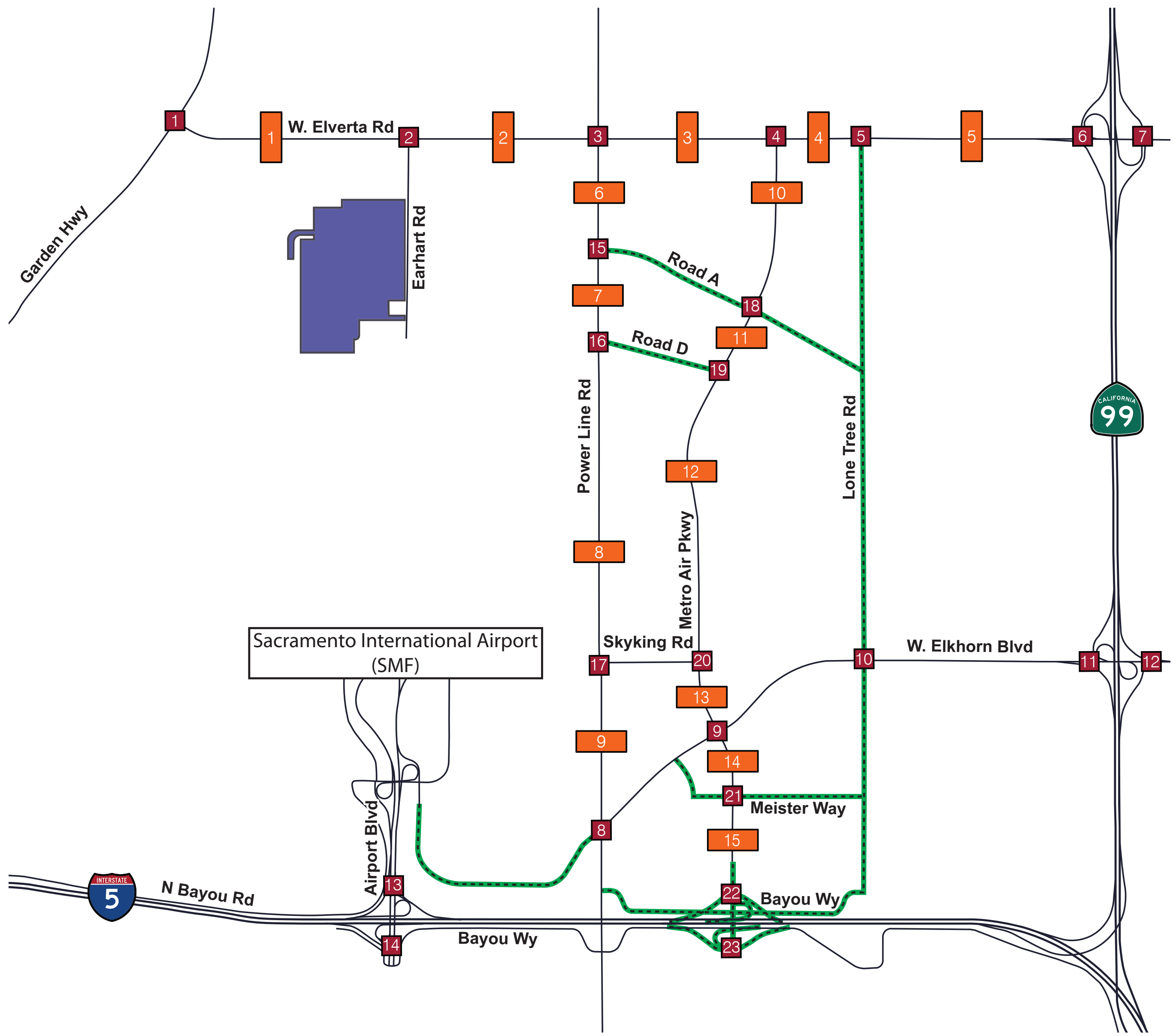
Table 10 presents the intersection operating conditions for the Existing (2020) scenario. As noted in Table 4, some of the intersections are specific to the MPU analysis and some to the Cargo Facility analysis, while the combined (MPU plus Cargo Scenario) includes all study area intersections. As indicated in Table 10, the study intersections operate between LOS A and LOS F under Existing (2020) Conditions. Analysis worksheets are provided in Appendix B. The LOS F results were calculated only at SSSC intersections for some side street movements. During these conditions the side street, minor movements are anticipated to experience significant delay.

Table 11 presents the intersection operating conditions for the Cumulative scenario. As indicated in Table 11, the study intersections operate between LOS A and LOS F under Cumulative Conditions. Analysis worksheets are provided in Appendix C. Similar to the Existing Conditions, for the Cumulative Scenarios, LOS F results were calculated for some SSSC intersections based on the average side street vehicle delay. During these conditions the side street, minor movements are anticipated to experience significant delay. The delay incurred by the proposed Green Line Extension was accounted for at the intersection of Metro Air Parkway with Meister Way (Intersection #21).



Kimley»Horn

Figure 13
Existing Plus MPU Peak Hour Traffic Volumes
Intersections 1-16



17	18	19	20
Cargo Only	Cumulative Only	Cumulative Only	Cargo Only
21	22	23	
Cumulative Only	Cumulative Only	Cumulative Only	

LEGEND

- Future Roadway
- # Study Intersection
- XX/YY AM/PM Volumes
- (ZZ) U-turn Volumes

NOT TO SCALE

Kimley»Horn

Figure 14
Existing Plus MPU Peak Hour Traffic Volumes
Intersections 17-23

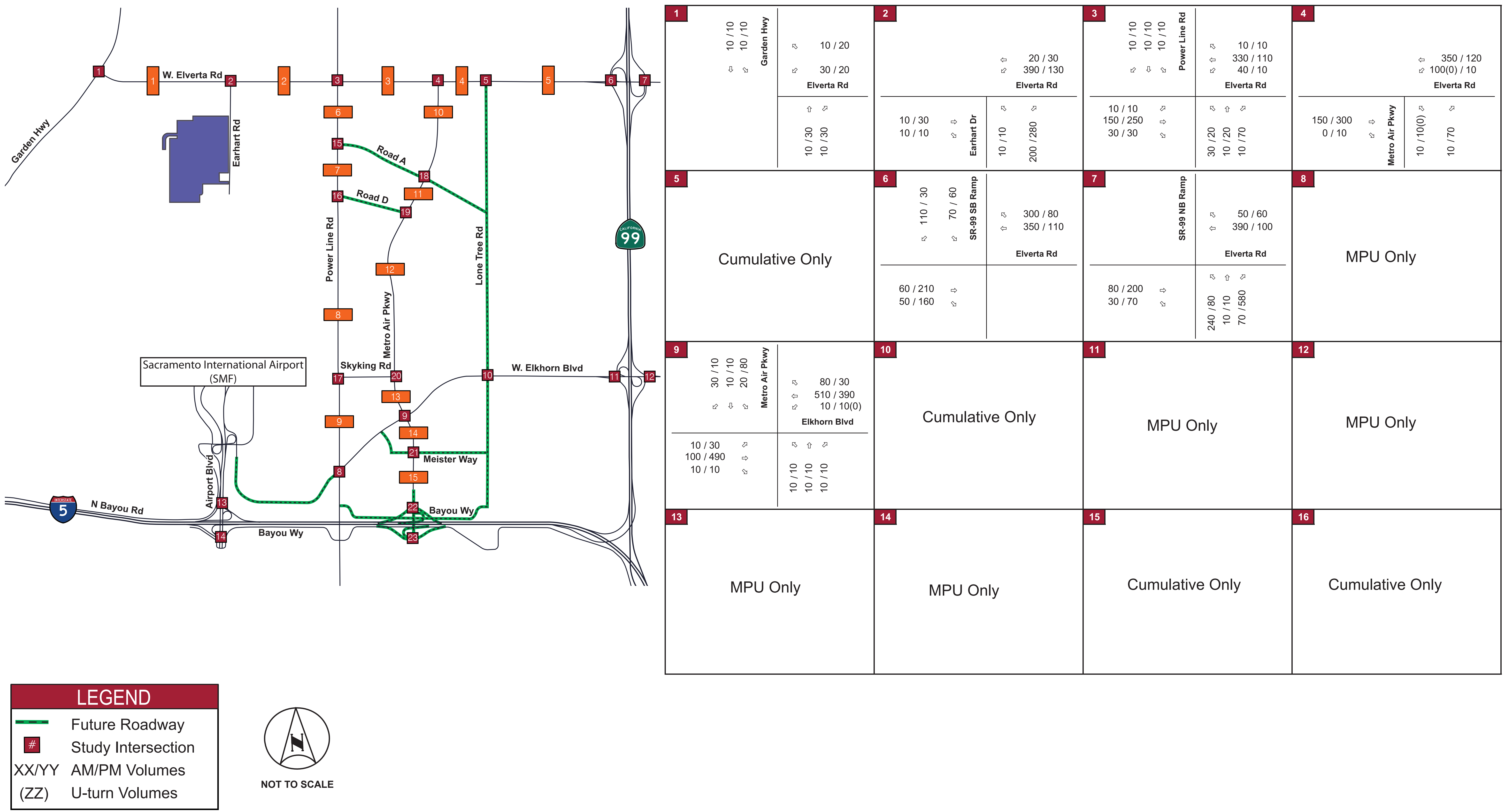
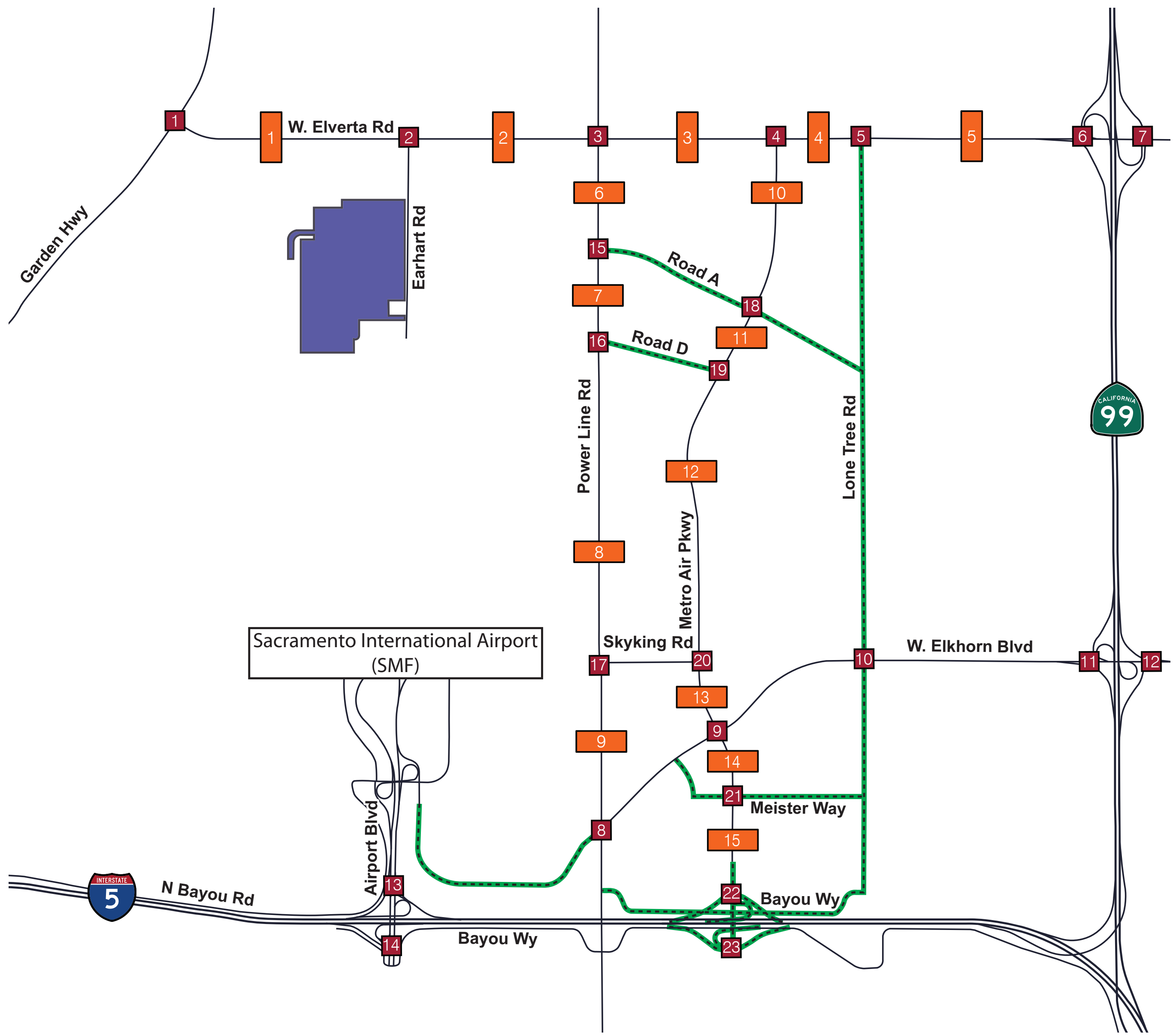
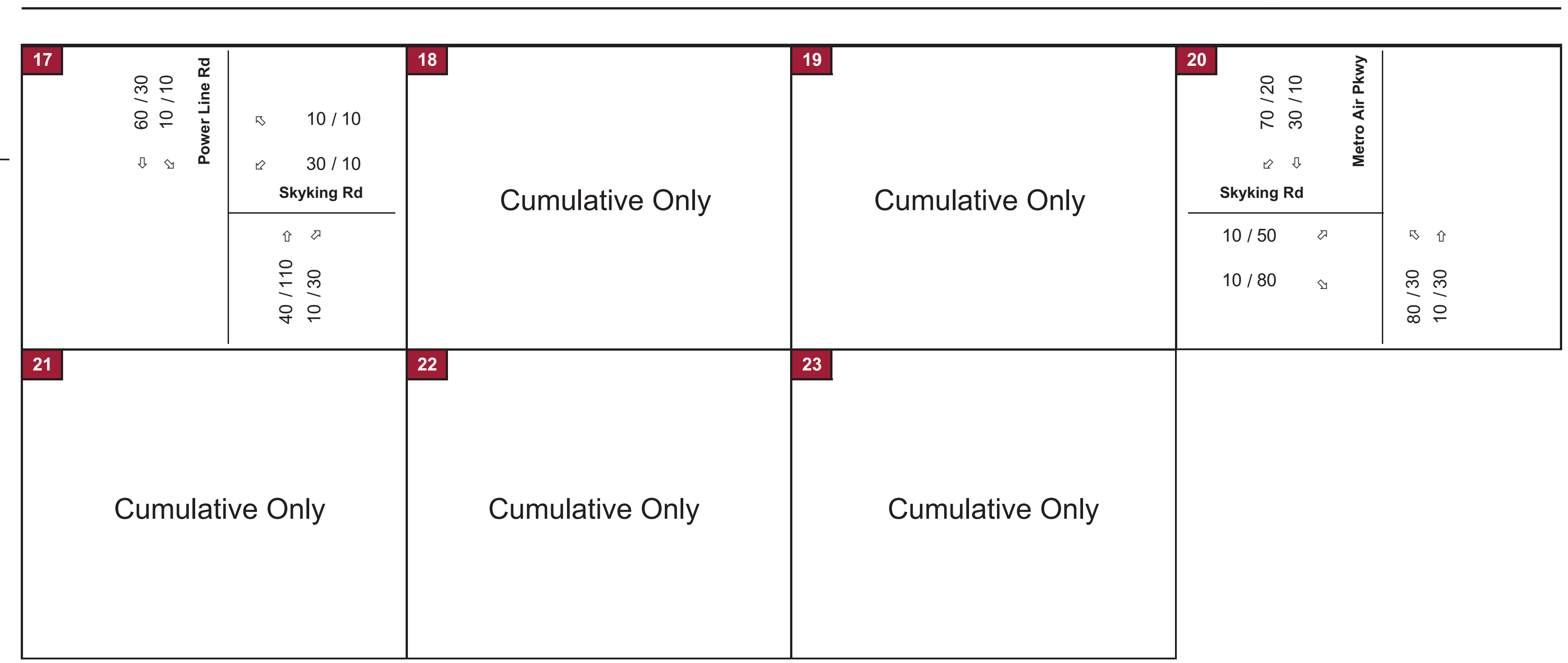


Figure 15
Existing Plus Cargo Peak Hour Traffic Volumes
Intersections 1-16





LEGEND

Future Roadway
Study Intersection
XX/YY AM/PM Volumes
(ZZ) U-turn Volumes

NOT TO SCALE

Figure 16
Existing Plus Cargo Peak Hour Traffic Volumes
Intersections 17-23

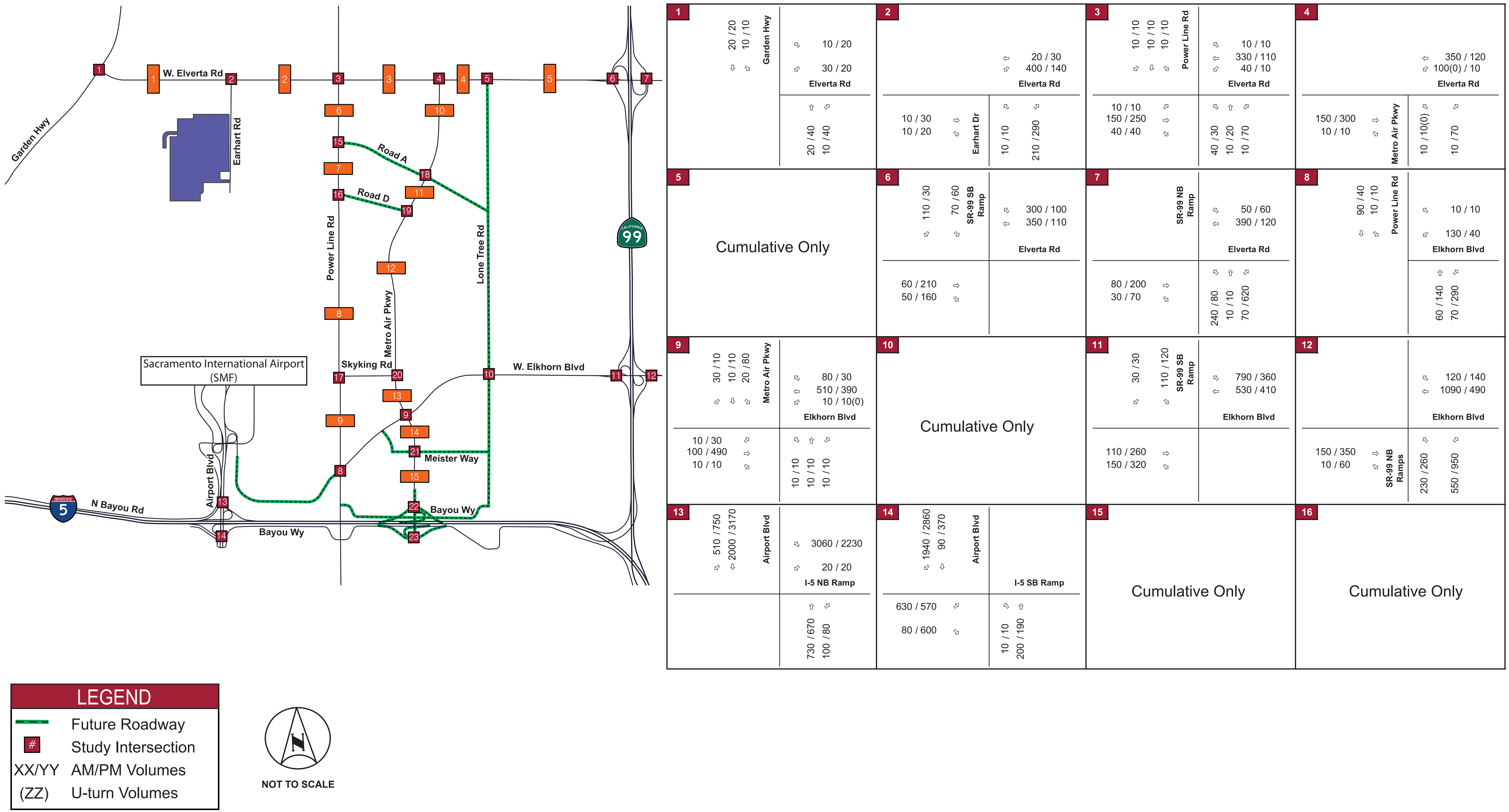


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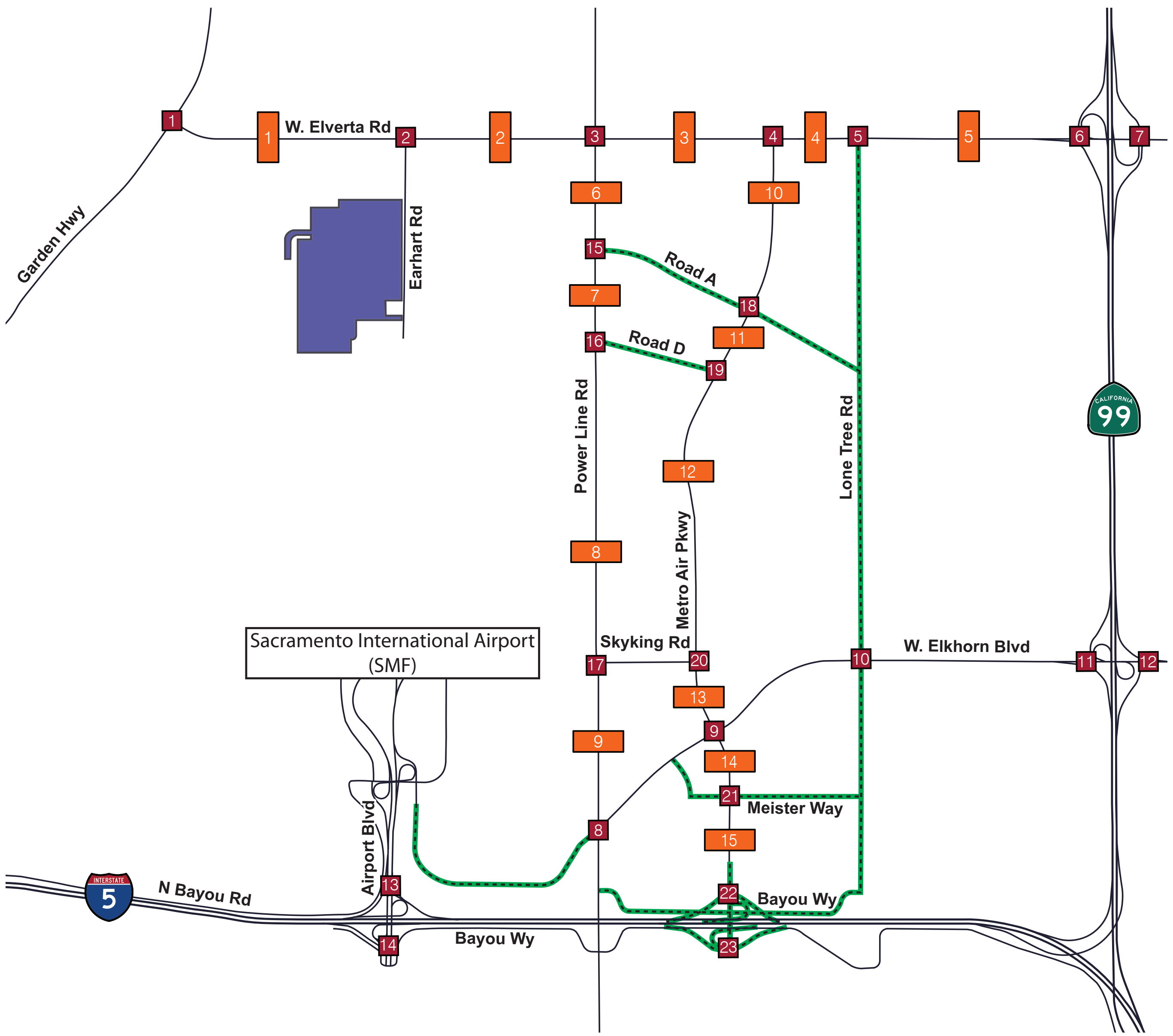
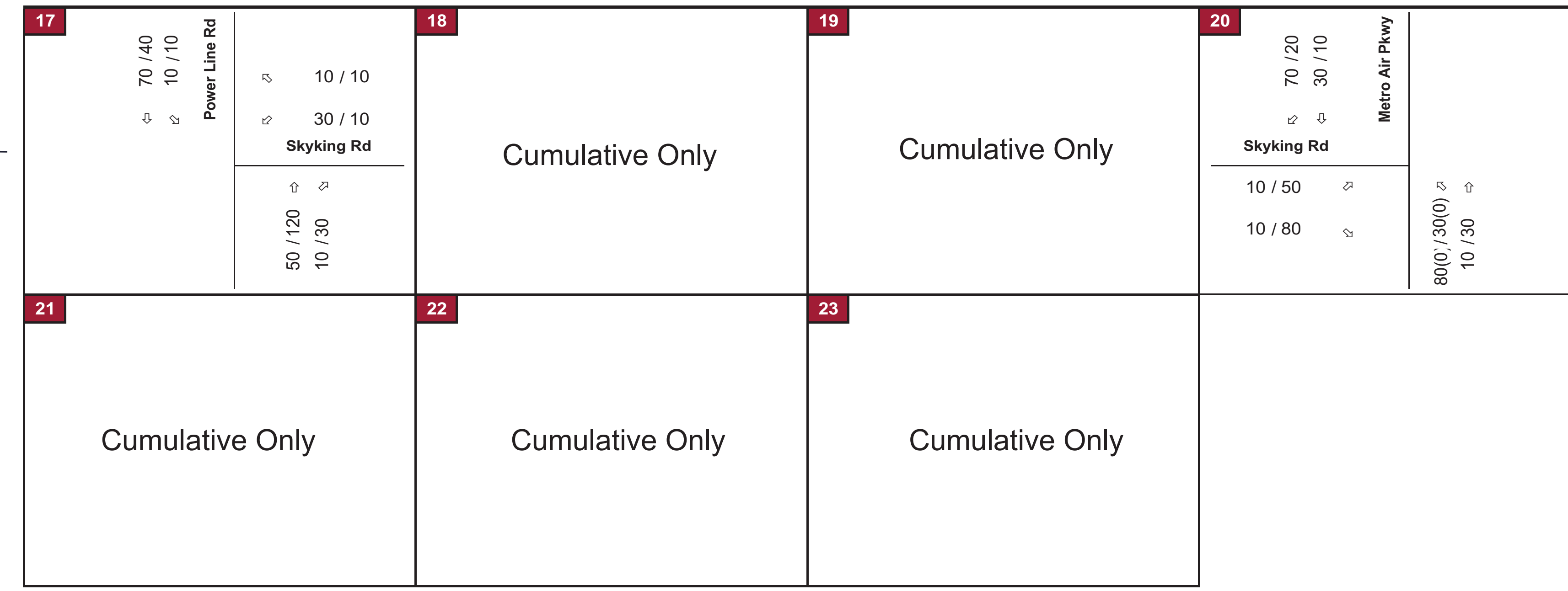
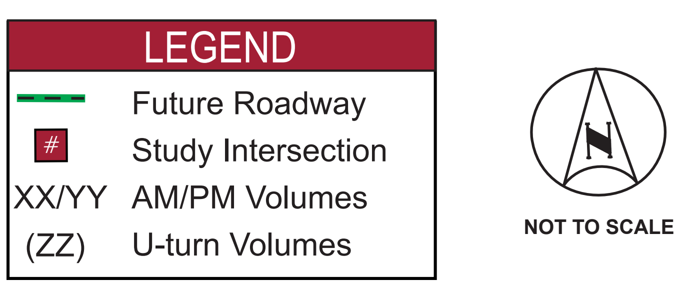
Figure 17
Existing Plus MPU Plus Cargo Peak Hour Traffic Volumes
Intersections 1-16







Kimley»Horn

Figure 18
Existing Plus MPU Plus Cargo Peak Hour Traffic Volumes
Intersections 17-23

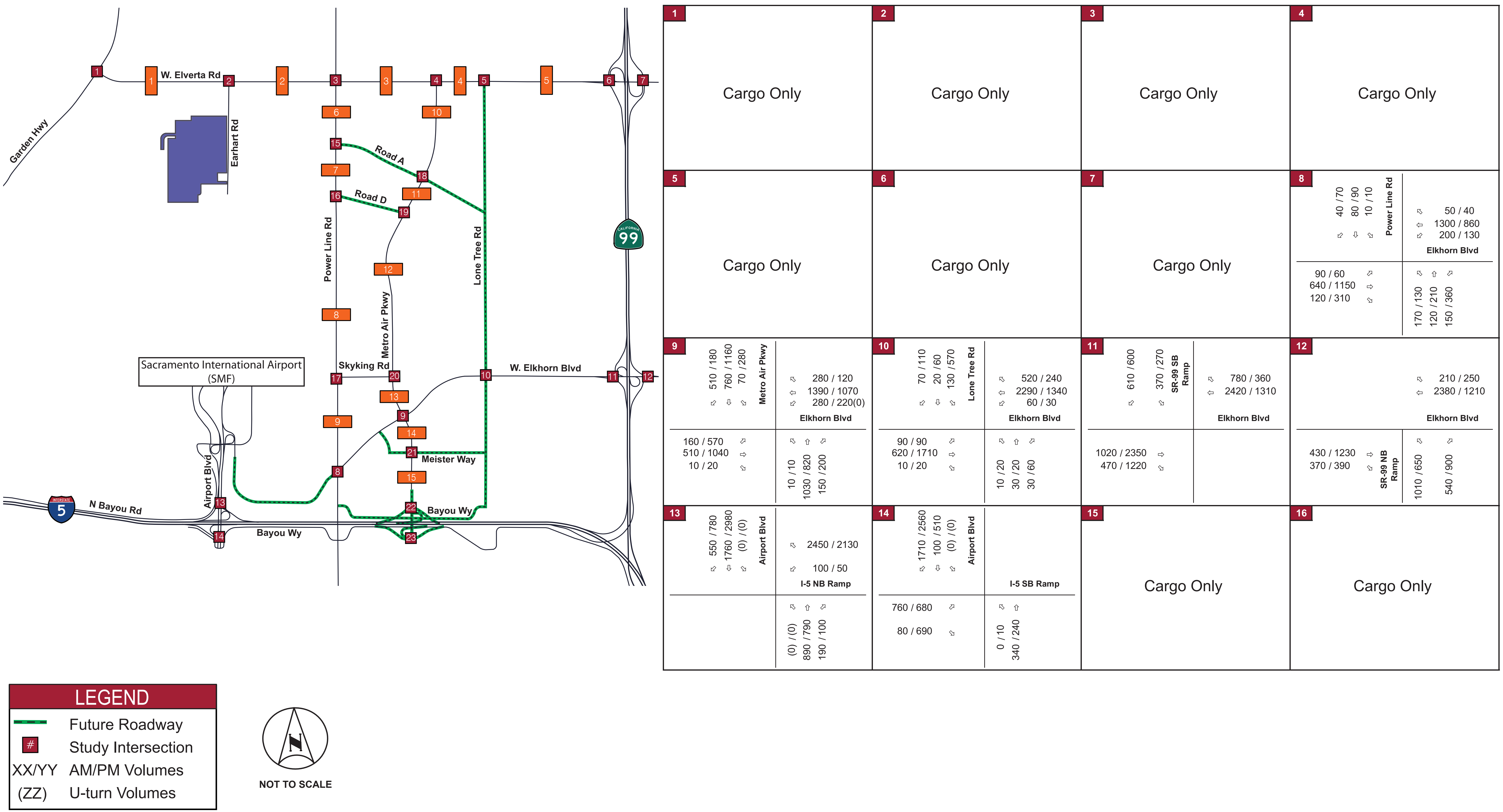
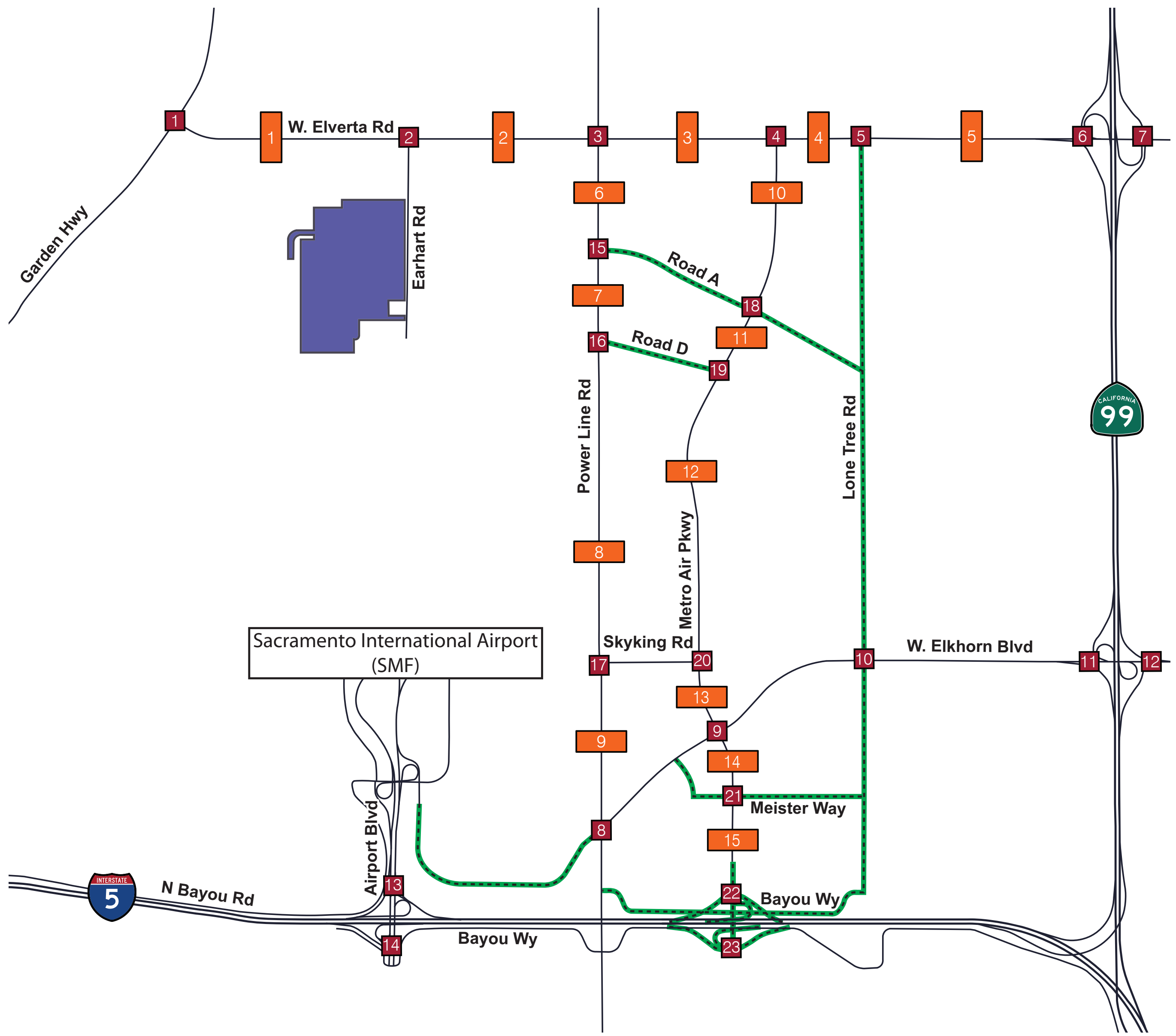


Figure 19
Cumulative Plus MPU Peak Hour Traffic Volumes
Intersections 1-16



17 Cargo Only

18 Cargo Only

19 Cargo Only

20 Cargo Only

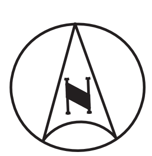
21 Cargo Only

22 Cargo Only

23 Cargo Only

LEGEND

Future Roadway
Study Intersection
XX/YY AM/PM Volumes
(ZZ) U-turn Volumes



NOT TO SCALE

Kimley»Horn

Figure 20
Cumulative Plus MPU Peak Hour Traffic Volumes
Intersections 17-23

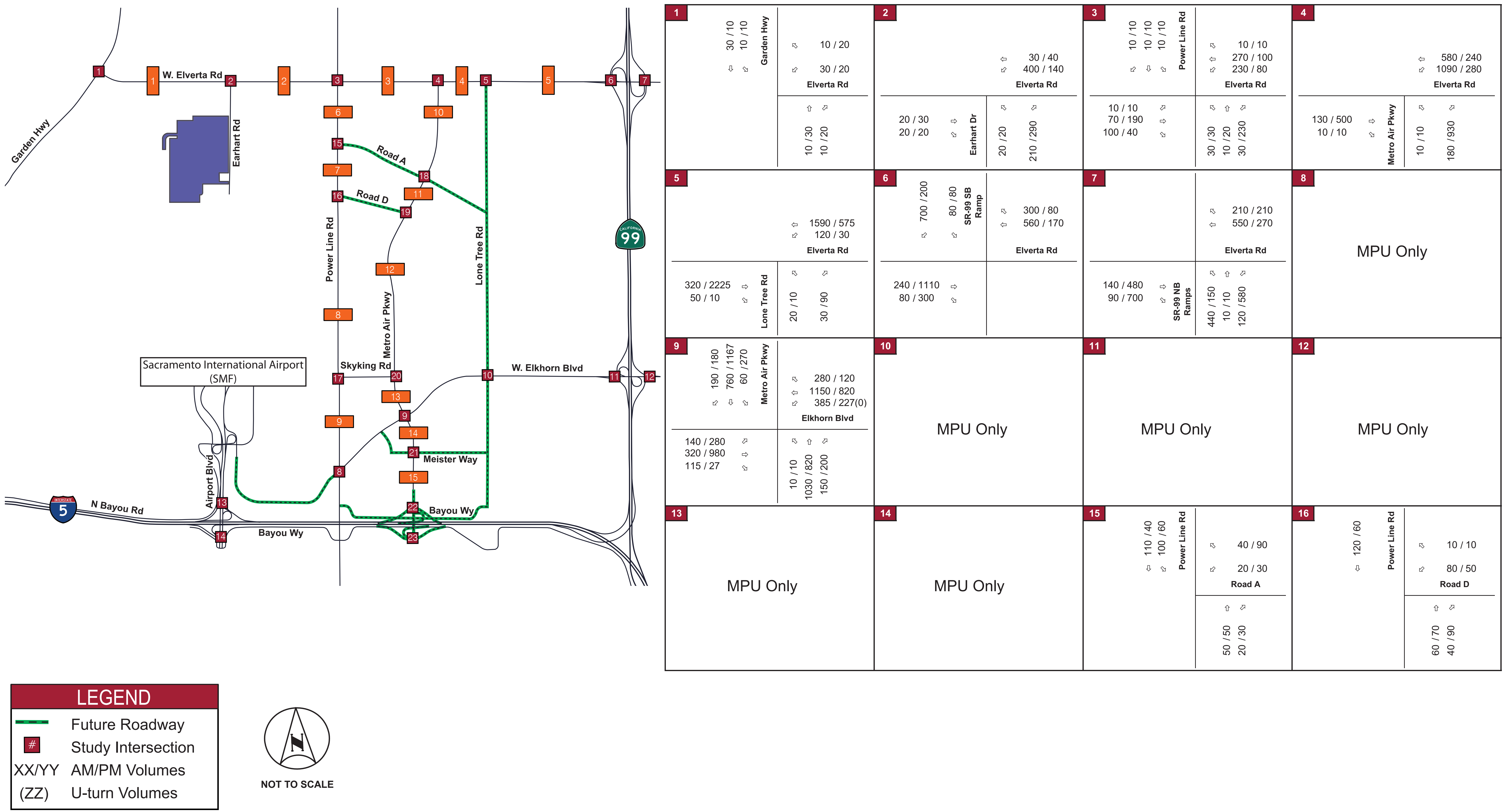


Figure 21
Cumulative Plus Cargo Peak Hour Traffic Volumes
Intersections 1-16

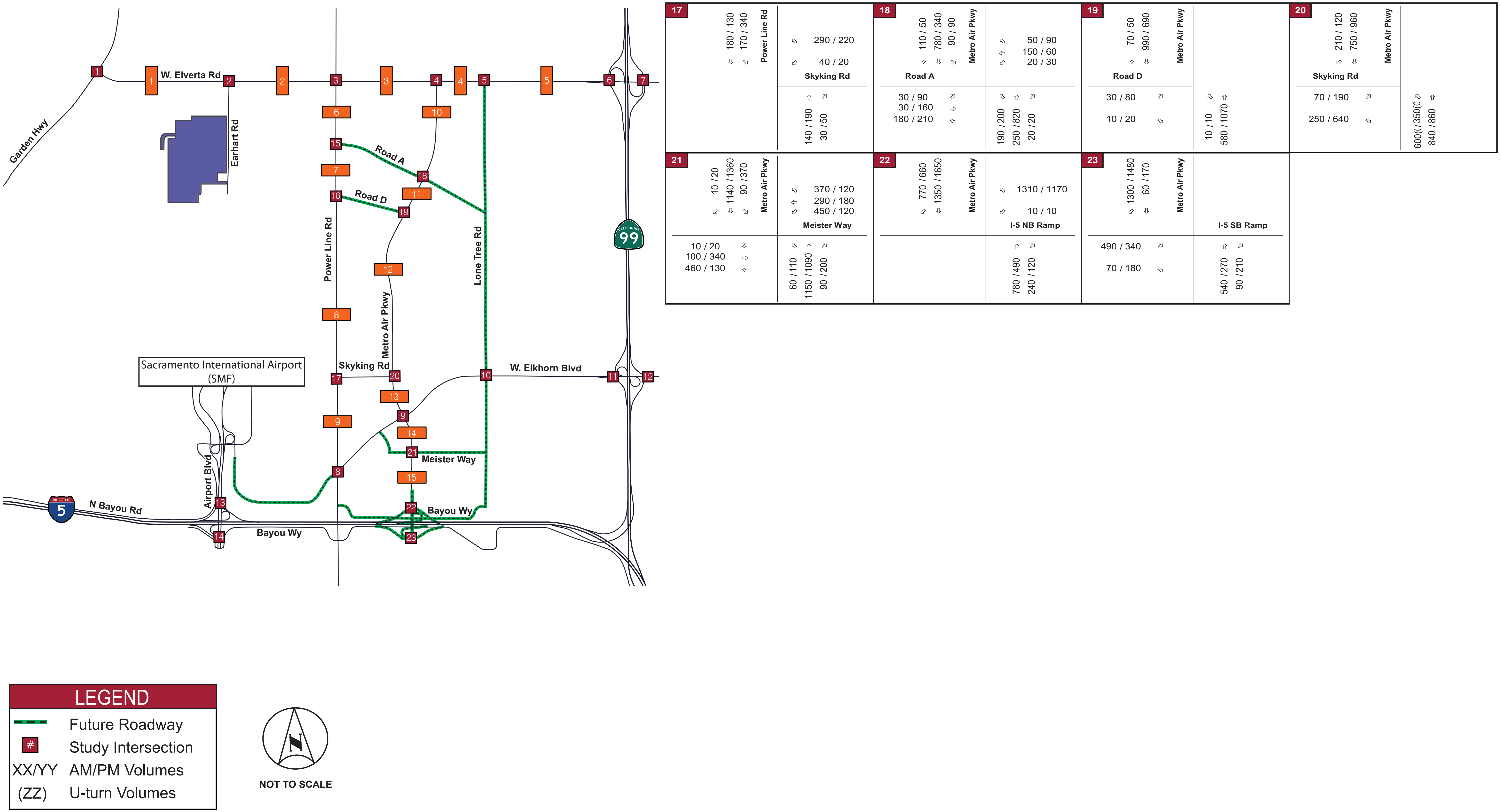


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Figure 22
Cumulative Plus Cargo Peak Hour Traffic Volumes
Intersections 17-23

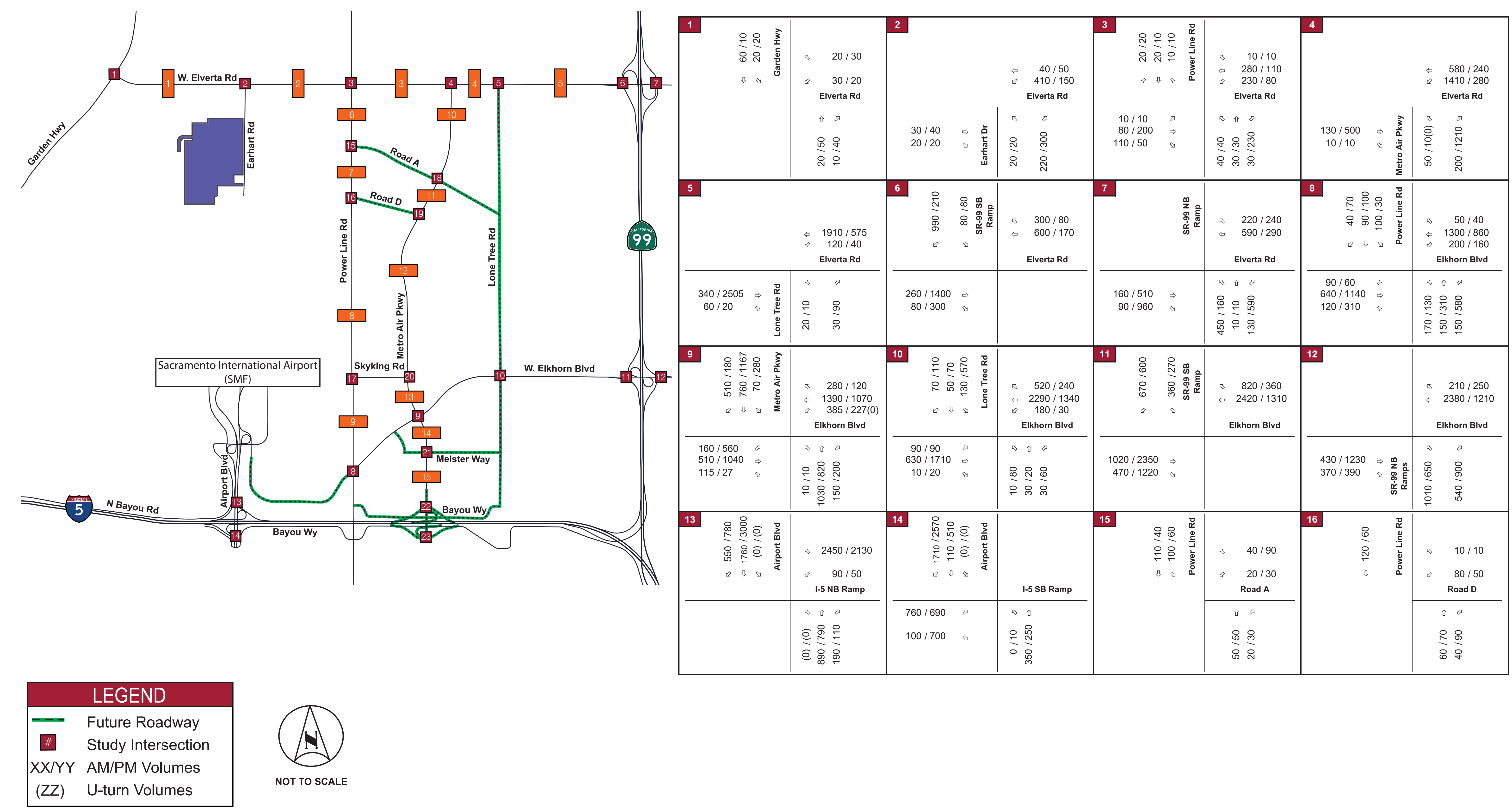
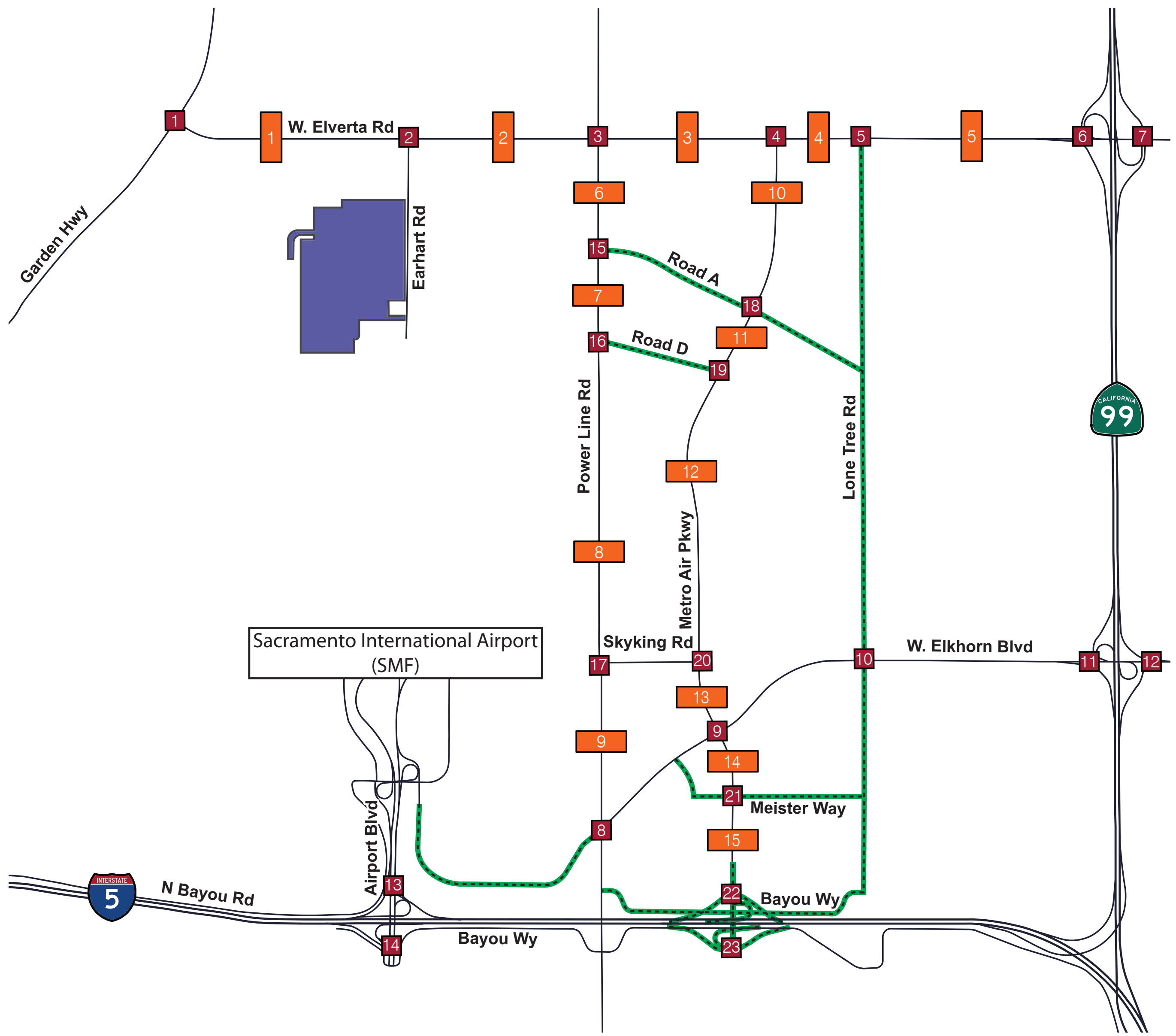
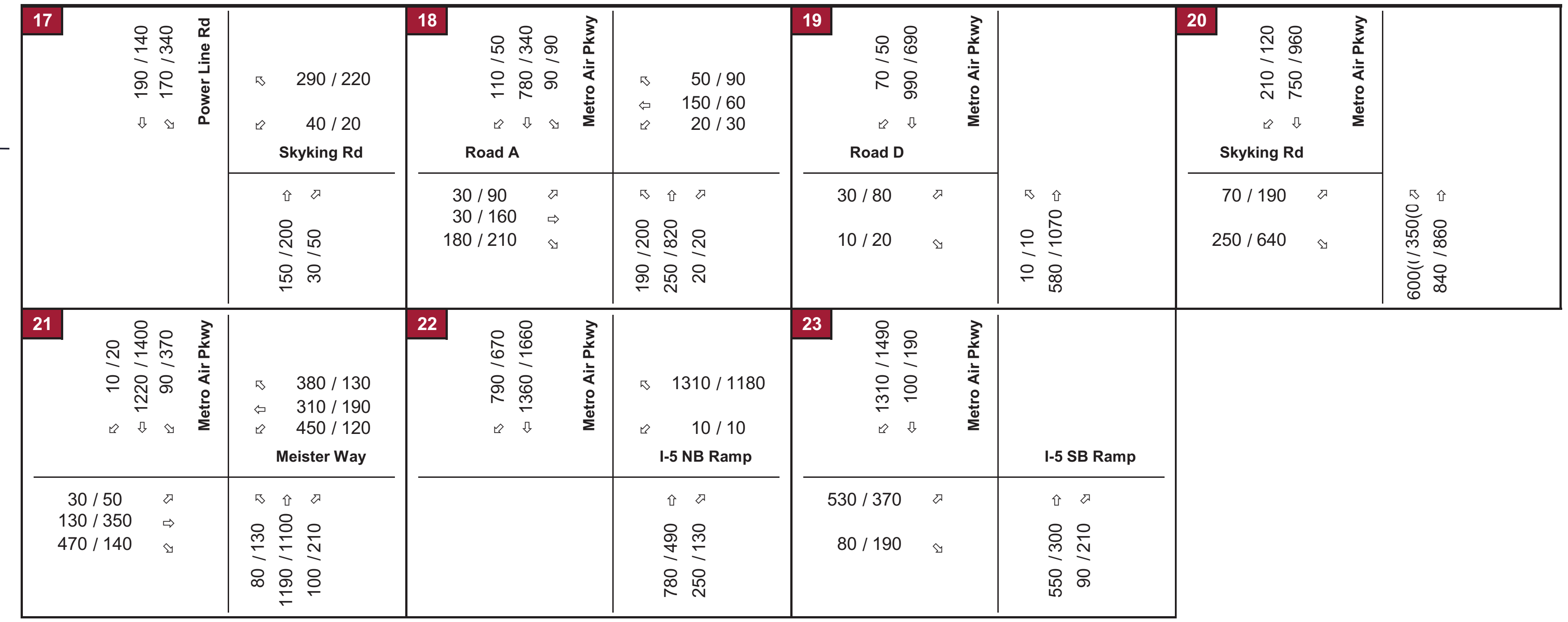


Figure 23
Cumulative Plus MPU Plus Cargo Peak Hour Traffic Volumes
Intersections 1-16





LEGEND

- Future Roadway
- # Study Intersection
- XX/YY AM/PM Volumes
- (ZZ) U-turn Volumes

NOT TO SCALE

Kimley»Horn

Figure 24
Cumulative Plus MPU Plus Cargo Peak Hour Traffic Volumes
Intersections 17-23

Table 10 – Existing (2020) Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing		Existing plus MPU		Existing plus Cargo		Existing plus MPU plus Cargo	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	Elverta Road @ Garden Highway	SSSC	AM	5.8 (8.7)	A (A)			5.3 (8.8)	A (A)	4.3 (8.9)	A (A)
			PM	3.3 (8.7)	A (A)			3.6 (8.9)	A (A)	2.9 (9.0)	A (A)
2	Elverta Road @ Earhart Drive	SSSC	AM	5.3 (8.3)	A (A)			8.2 (10.0)	A (B)	8.3 (10.1)	A (B)
			PM	3.0 (8.5)	A (A)			7.9 (10.0)	A (B)	7.9 (10.1)	A (B)
3	Elverta Road @ Power Line Road	AWSC	AM	7.4	A			10.1	B	10.2	B
			PM	7.2	A			9.1	A	9.2	A
4	Elverta Road @ Metro Air Parkway	SSSC	AM	0.4 (8.6)	A (A)			1.6 (12.0)	A (B)	1.6 (12.1)	A (B)
			PM	3.2 (9.1)	A (A)			1.8 (10.7)	A (B)	1.8 (10.7)	A (B)
6	Elverta Road @ SR-99 Southbound Ramps	Signal	AM	3.3	A			4.4	A	4.5	A
			PM	4.0	A			3.6	A	4.0	A
7	Elverta Road @ SR-99 Northbound Ramps	Signal	AM	7.4	A			10.1	A	10.1	B
			PM	5.9	A			6.8	A	5.7	A
8	Elkhorn Boulevard @ Power Line Road	Signal	AM	8.3	A	8.2	A			8.5	A
			PM	8.8	A	9.0	A			9.4	A
9	Elkhorn Boulevard @ Metro Air Parkway	Signal	AM	17.1	C	18.0	C	19.2	C	19.2	C
			PM	16.7	C	17.0	C	19.3	C	19.3	C
11	Elkhorn Boulevard @ SR-99 Southbound Ramps	SSSC	AM	2.7 (14.5)	A (B)	2.7 (14.5)	A (B)			2.7 (15.9)	A (C)
			PM	2.4 (16.0)	A (C)	2.4 (16.0)	A (C)			2.9 (16.9)	A (C)
12	Elkhorn Boulevard @ SR-99 Northbound Ramps	Signal	AM	8.4	A	10.2	B			10.8	B
			PM	6.2	A	6.3	A			6.3	A
13	Airport Boulevard @ I-5 Northbound Ramps	SSSC	AM	0.2 (16.3)	A (C)	0.3 (55.5)	A **(F)**			0.4 (57.6)	A **(F)**
			PM	0.3 (26.2)	A (D)	0.5 (138.0)	A **(F)**			0.8 (163.9)	A **(F)**
14	Airport Boulevard @ I-5 Southbound Ramps	SSSC	AM	5.7 (10.7)	A (B)	15.0 (21.4)	B (C)			18.1 (27.7)	C (D)
			PM	16.9(32.2)	C (D)	40.2 (86.1)	**E (F)**			44.3 (95.1)	**E (F)**
17	Power Line Road @ Skyking Road	AWSC	AM	7.7	A			7.8	A	7.8	A
			PM	7.5	A			7.8	A	7.9	A
20	Metro Air Parkway @ Skyking Road	SSSC	AM	0.7 (9.4)	A (A)			3.7 (9.9)	A (A)	3.7 (9.9)	A (A)
			PM	5.7 (9.1)	A (A)			6.3 (9.3)	A (A)	6.3 (9.3)	A (A)

Notes: a - Reported delay for SSSC intersections includes the overall intersection delay, as well the delay and associated LOS for the worst lane/movement.
b - **Bold** represents unacceptable operations and gray shading represents a project induced deficiency resulting in improvement recommendations

Table 11 – Cumulative Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Cumulative		Cumulative plus MPU		Cumulative plus Cargo		Cumulative plus MPU plus Cargo	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	Elverta Road @ Garden Highway	SSSC	AM	4.8 (8.9)	A (A)			4.3 (8.9)	A (A)	3.7 (9.1)	A (A)
			PM	3.9 (8.8)	A (A)			3.9 (8.8)	A (A)	3.5 (9.1)	A (A)
2	Elverta Road @ Earhart Drive	Existing SSSC Prop. Signal	AM	8.5	A			9.2	A	9.4	A
			PM	8.2	A			8.8	A	8.9	A
3	Elverta Road @ Power Line Road	Signal	AM	19.7	B			17.6	B	18.2	B
			PM	21.0	C			20.9	C	21.0	A
4	Elverta Road @ Metro Air Parkway	Signal	AM	11.6	B			11.7	B	13.8	B
			PM	24.3	C			31.2	C	64.3	E
5	Elverta Road @ Lone Tree Road	Signal	AM	6.6	A			6.7	A	8.4	A
			PM	8.7	A			11.4	B	17.3	B
6	Elverta Road @ SR-99 Southbound Ramps	Signal	AM	8.4	A			8.6	A	10.9	B
			PM	9.4	A			9.4	A	11.0	B
7	Elverta Road @ SR-99 Northbound Ramps	Signal	AM	13.8	B			13.8	A	15.0	B
			PM	8.0	A			8.2	A	8.2	A
8	Elkhorn Boulevard @ Power Line Road	Signal	AM	22.1	C	28.9	C			37.2	D
			PM	25.4	C	32.0	C			58.0	E
9	Elkhorn Boulevard @ Metro Air Parkway	Signal	AM	26.0	C	33.3	C	26.6	C	34.3	C
			PM	28.5	C	38.6	D	28.6	C	38.2	D
10	Elkhorn Boulevard @ Lone Tree Road	Signal	AM	21.5	C	24.2	C			58.0	E
			PM	40.1	D	41.8	C			42.0	D
11	Elkhorn Boulevard @ SR-99 Southbound Ramps	Signal	AM	27.3	C	35.5	D			39.8	D
			PM	13.6	B	30.3	C			30.3	C
12	Elkhorn Boulevard @ SR-99 Northbound Ramps	Signal	AM	65.5	E	94.2	F			94.2	F
			PM	12.0	B	12.2	B			12.2	B
13	Airport Boulevard @ I-5 Northbound Ramps	SSSC	AM	0.3 (20.1)	A (C)	9.3 (254.6)	A (F)			7.0 (214.1)	A (F)
			PM	0.3 (32.0)	A (D)	5.5 (418.1)	A (F)			5.4 (418.1)	A (F)
14	Airport Boulevard @ I-5 Southbound Ramps	SSSC	AM	6.6 (14.0)	A (B)	47.4 (78.9)	F (F)			50.9 (87.1)	F (F)
			PM	56.6 (128.1)	F (F)	149.6 (325.4)	F (F)			157.1 (341.4)	F (F)

Notes: a - Reported delay for SSSC intersections includes the overall intersection delay, as well the delay and associated LOS for the worst lane/movement.
b - **Bold** represents unacceptable operations and gray shading represents a project induced deficiency resulting in improvement recommendations

Table 11 – Cumulative Intersection Levels of Service (continued)

ID	Intersection	Control	Peak Hour	Cumulative		Cumulative plus MPU		Cumulative plus Cargo		Cumulative plus MPU plus Cargo	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
15	Power Line Road @ Road A	SSSC	AM	5.9 (9.3)	A (A)			4.0 (9.8)	A (A)	4.0 (9.8)	A (A)
			PM	6.0 (9.3)	A (A)			5.3 (9.5)	A (A)	5.3 (9.5)	A (A)
16	Power Line Road @ Road D	SSSC	AM	4.4 (9.3)	A (A)			2.9 (10.0)	A (A)	2.9 (10.0)	A (A)
			PM	2.4 (9.4)	A (A)			2.1 (9.7)	A (A)	2.1 (9.7)	A (A)
17	Power Line Road @ Skyking Road	AWSC	AM	10.7	B			12.8	B	13.1	B
			PM	14.9	B			16.3	C	17.0	C
18	Metro Air Parkway @ Road A	Signal	AM	21.1	C			21.1	C	21.1	C
			PM	20.0	B			20.0	B	20.0	B
19	Metro Air Parkway @ Road D	Signal	AM	6.2	A			6.2	A	6.2	A
			PM	6.5	A			6.5	A	6.5	A
20	Metro Air Parkway @ Skyking Road	Signal	AM	45.9	D			45.9	D	45.9	D
			PM	48.0	D			48.0	D	48.0	D
21	Metro Air Parkway @ Meister Way	Signal	AM	38.9	D			52.0	D	56.1	E
			PM	39.5	D			41.0	D	40.9	D
22	Metro Air Parkway @ I-5 Northbound Ramps	Signal	AM	50.3	D			49.7	D	52.2	D
			PM	29.2	C			31.5	C	32.8	C
23	Metro Air Parkway @ I-5 Southbound Ramps	Signal	AM	10.1	B			10.2	B	10.6	B
			PM	8.4	A			8.4	A	8.6	A

Notes: a - Reported delay for SSSC intersections includes the overall intersection delay, as well the delay and associated LOS for the worst lane/movement.
b - **Bold** represents unacceptable operations and gray shading represents a project induced deficiency resulting in improvement recommendations

Shift Change Scenario

In addition to the LOS analyses provided in the previous sections, an additional scenario was analyzed specific to the off-peak shift changes associated with the proposed cargo facility. For this additional scenario, Elverta Road intersections #2 and #3were analyzed based on the previously described shift-change pattern in which 750 employees arrive and 750 depart the proposed facility during the peak-hour. This scenario represents the peak, recurring conditions and is used to identify the anticipated capacity needed at the subject intersections.

Figure 25 provides an overview of the shift-change volumes and resulting intersection configuration that is required to accommodate the cargo facility's operations as described above. As noted, this configuration is included in the operations analyses contained in this document although the facility's contributions to traffic during the traditional peak-hours is considered to be nominal.

This project access location (Intersection #2) should be designed in a manner consistent with Sacramento County's standards to ensure adequate sight-distance and geometric elements are provided. As depicted in Figure 25, the combination of peak entering and exiting vehicles necessitates the identified lane configuration to accommodate all vehicle types anticipated to use travel this route.

Table 12 presents the anticipated operations at the intersection during the off-peak shift-change periods. Detailed analysis results are included in Appendix D.

Table 12 – Shift Change Scenario, Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing plus MPU plus Cargo		Cumulative plus MPU plus Cargo	
				Delay (sec)	LOS	Delay (sec)	LOS
2	Elverta Road @ Earhart Drive	Signal	AM	15.6	B	17.1	B
			PM	20.2	C	20.3	C
3	Elverta Road @ Powerline Road	Existing AWSC	AM	538.5	F	N/A	
			PM	608.5	F		
3	Elverta Road @ Powerline Road	Prop. Signal	AM	44.9	D	45.4	D
			PM	79.4	E	79.2	E

Based on the results of the shift change scenario analysis, the following improvements are recommended to accommodate the shift change traffic volumes (and are used in the operations analyses):

- Intersection #2 – Elverta Road @ Earhart Drive
    - Install a traffic signal (as warranted and documented later in this report)
    - Install dual northbound right-turn lanes with 175-feet of queue storage (adequate deceleration distance should be provided in addition to this storage)
    - Install eastbound receiving lane to accept the #2 northbound right-turn lane
    - Install westbound dual left-turn lanes with 300-feet of queue storage (adequate deceleration distance should be provided in addition to this storage)
    - Install southbound receiving lanes to accept the westbound left-turn lanes
- Intersection #3 – Elverta Road @ Power Line Road
    - Install a traffic signal (as warranted and documented later in this report)
    - Install additional eastbound through lane to provide for two (2) through lanes from Earhart Drive to Power Line Road
    - Install eastbound receiving lane for the additional eastbound through approach lane

Roadway Segment Analysis Results

The analysis of each of the roadway segments was conducted in a manner consistent with Sacramento County's *Traffic Impact Analysis Guidelines*[9] within which existing and anticipated Average Daily Traffic

(ADT) are used. **Table 13** presents the roadway segment operating conditions for the Existing (2020) scenario. As indicated in **Table 13**, the study roadway segments operate between LOS A and LOS B under Existing (2020) Conditions. **Table 14** presents the roadway segment operating conditions for the Cumulative scenario. As indicated in **Table 14**, the study roadway segments operate between LOS A and LOS C under Cumulative Conditions.

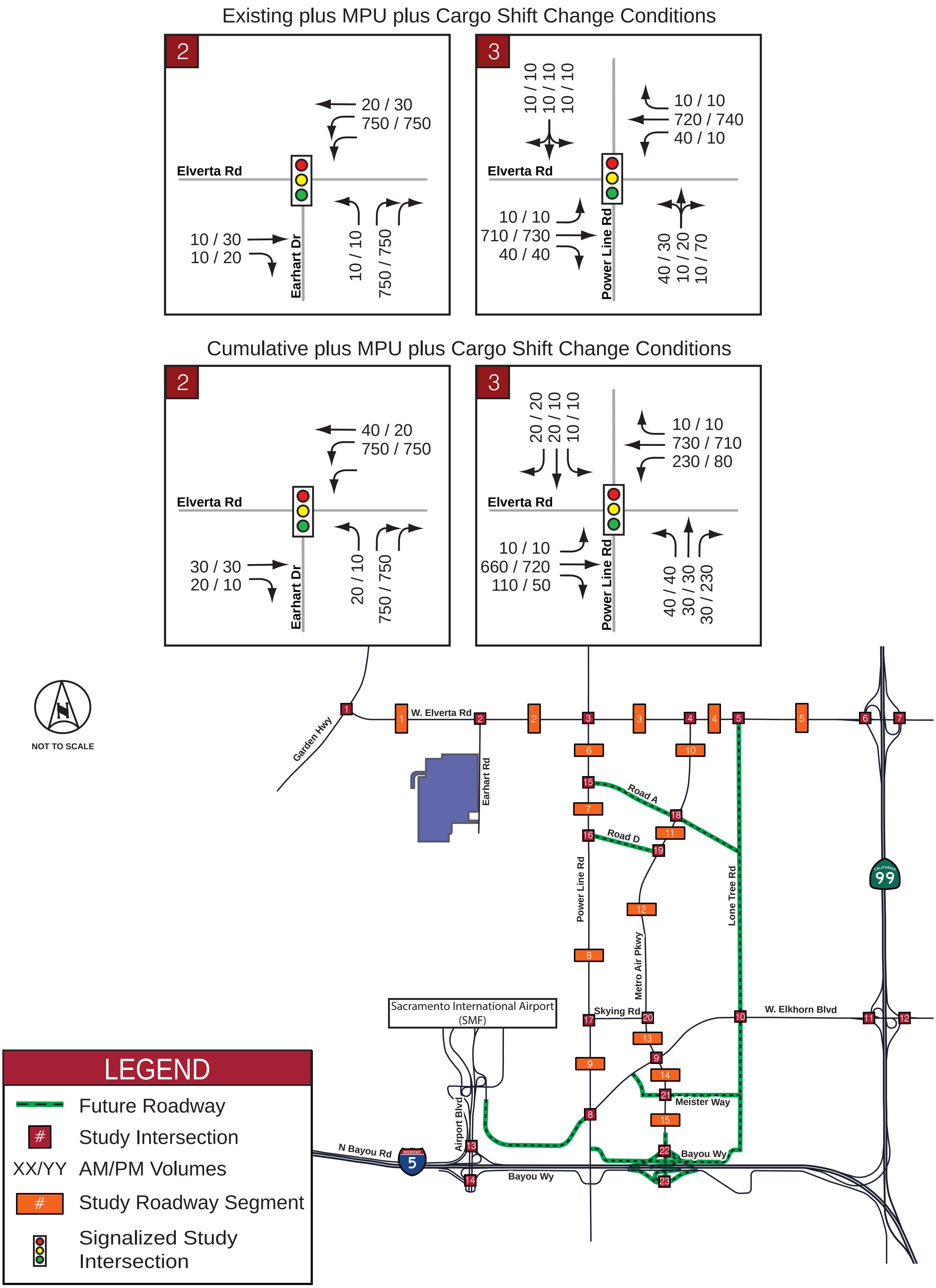


Figure 25

Cargo Shift Change Volumes and Lane Configuration

Table 13 – Existing (2020) Roadway Segment Levels of Service

ID	Location	Facility Type	# of Lanes	Existing		Existing plus MPU		Existing plus Cargo		Existing plus MPU plus Cargo	
				Daily Volume	LOS	Daily Volume	LOS	Daily Volume	LOS	Daily Volume	LOS
1	Elverta Road, Garden Highway to Earhart Drive	Rural, <24' of pavement, <6' paved shoulders	2	563	A	570	A	600	A	620	A
2	Elverta Road, Earhart Drive to Power Line Road	Rural, <24' of pavement, <6' paved shoulders	2	876	A	880	A	6,860	E	6,940	E
3	Elverta Road, Power Line Road to Metro Air Parkway	Rural, <24' of pavement, <6' paved shoulders	2	1,232	B	1,240	B	6,620	E	6,620	E
4	Elverta Road, Metro Air Parkway to Lone Tree Road	Rural, <24' of pavement, <6' paved shoulders	2	1,812	B	1,820	B	7,200	E	7,200	E
5	Elverta Road, Lone Tree Road to SR-99	Rural, <24' of pavement, <6' paved shoulders	2	1,790	B	1,790	B	6,980	E	6,980	E
6	Power Line Road, Elverta Road to Road A	Rural, <24' of pavement, <6' paved shoulders	2	539	A	550	A	1,140	B	1,220	B
7	Power Line Road, Road A to Road D	Rural, <24' of pavement, <6' paved shoulders	2	539	A	550	A	1,140	B	1,220	B
8	Power Line Road, Road D to Skyking Road	Rural, <24' of pavement, <6' paved shoulders	2	539	A	550	A	1,140	B	1,220	B
9	Power Line Road, Skyking Road to Elkhorn Boulevard	Rural, 24' of pavement, 6' paved shoulders	2	1,023	A	1,030	A	1,620	A	1,710	A
10	Metro Air Parkway, Elverta Road to Road A	Rural, 24' of pavement, 6' paved shoulders	2	602	A	610	A	610	A	610	A
11	Metro Air Parkway, Road A to Road D	Rural, 24' of pavement, 6' paved shoulders	2	602	A	610	A	610	A	610	A
12	Metro Air Parkway, Road D to Skyking Road	Rural, 24' of pavement, 6' paved shoulders	2	602	A	610	A	610	A	610	A
13	Metro Air Parkway, Skyking Road to Elkhorn Boulevard	Rural, 24' of pavement, 6' paved shoulders	2	1,710	A	1,710	A	1,710	A	1,710	A
14	Metro Air Parkway, Elkhorn Boulevard to Meister Way	*Cumulative Only*									
15	Metro Air Parkway, Meister Way to I-5	*Cumulative Only*									

Notes: a - **Bold** represents unacceptable operations and gray shading represents a project induced deficiency resulting in improvement recommendations

Table 14 – Cumulative Roadway Segment Levels of Service

ID	Location	Facility Type	# of Lanes	Cumulative		Cumulative plus MPU		Cumulative plus Cargo		Cumulative plus MPU plus Cargo	
				Daily Volume	LOS	Daily Volume	LOS	Daily Volume	LOS	Daily Volume	LOS
1	Elverta Road, Garden Highway to Earhart Drive	Rural, <24' of pavement, <6' shoulders	2	600	A	600	A	600	A	600	A
2	Elverta Road, Earhart Drive to Power Line Road	Rural, <24' of pavement, <6' shoulders	2	900	A	900	A	5,260	D	5,260	D
3	Elverta Road, Power Line Road to Metro Air Parkway	Rural, <24' of pavement, <6' shoulders	2	5,700	D	5,700	D	9,270	E	9,270	E
4	Elverta Road, Metro Air Parkway to Lone Tree Road	Arterial, High Access Control	4	18,600	A	19,520	A	21,930	A	22,860	A
5	Elverta Road, Lone Tree Road to SR-99	Arterial, High Access Control	4	19,800	A	20,720	A	23,040	A	23,960	A
6	Power Line Road, Elverta Road to Road A	Rural, <24' of pavement, <6' shoulders	2	3,000	C	3,000	C	3,780	D	3,780	D
7	Power Line Road, Road A to Road D	Rural, <24' of pavement, <6' shoulders	2	1,100	B	1,100	B	1,880	B	1,880	B
8	Power Line Road, Road D to Skyking Road	Arterial, Moderate Access Control	2	5,200	A	5,200	A	5,980	A	5,980	A
9	Power Line Road, Skyking Road to Elkhorn Boulevard	Arterial, Moderate Access Control	2	3,100	A	3,100	A	3,880	A	3,880	A
10	Metro Air Parkway, Elverta Road to Road A	Arterial, Moderate Access Control	6	13,100	A	14,020	A	13,100	A	14,020	A
11	Metro Air Parkway, Road A to Road D	Arterial, Moderate Access Control	6	18,600	A	19,520	A	18,600	A	19,520	A
12	Metro Air Parkway, Road D to Skyking Road	Arterial, Moderate Access Control	6	24,500	A	25,420	A	24,500	A	25,420	A
13	Metro Air Parkway, Skyking Road to Elkhorn Boulevard	Arterial, Moderate Access Control	6	33,200	B	34,120	B	33,200	B	34,120	B
14	Metro Air Parkway, Elkhorn Boulevard to Meister Way	Arterial, Moderate Access Control	6	38,000	C	38,000	C	38,000	C	38,000	C
15	Metro Air Parkway, Meister Way to I-5	Arterial, Moderate Access Control	6	56,600	F	56,600	F	56,890	F	56,900	F

Notes: a - **Bold** represents unacceptable operations and gray shading represents a project induced deficiency resulting in improvement recommendations

Rural Roadway Functionality Analysis Results

Based on the Existing and Cumulative roadway segment ADTs, the functionality of the rural roadway segments was analyzed. Based on this analysis it was determined that the addition of the cargo facility would result in significant impacts under Existing Conditions and Cumulative Conditions. Based on functionality criteria, the project shall provide standard section (6' paved shoulder, two 12' travel lanes, 6' paved shoulder) on Elverta Road from Earhart Drive to SR-99.

Table 15 and **Table 16** present the rural roadway functionality and ADT for Existing (2020) Conditions and Cumulative Conditions, respectively.

Table 15 – Existing (2020) Rural Roadway Functionality Evaluation

ID	Roadway Segment	Existing Roadways			ADT			
		Travel Lanes	Pavement Width[1] (ft)	Substandard?[2]	Existing	Existing plus MPU	Existing plus Cargo	Existing plus MPU plus Cargo
1	Elverta Road, Garden Highway to Earhart Drive	2	<36	Yes	563	570	600	620
2	Elverta Road, Earhart Drive to Power Line Road	2	<36	Yes	876	880	6,860	6,940
3	Elverta Road, Power Line Road to Metro Air Parkway	2	<36	Yes	1,232	1,240	6,620	6,620
4	Elverta Road, Metro Air Parkway to Lone Tree Road	2	<36	Yes	1,812	1,820	7,200	7,200
5	Elverta Road, Lone Tree Road to SR-99	2	<36	Yes	1,790	1,790	6,980	6,980
6	Power Line Road, Elverta Road to Road A	2	<36	Yes	539	550	1,140	1,220
7	Power Line Road, Road A to Road D	2	<36	Yes	539	550	1,140	1,220
8	Power Line Road, Road D to Skyking Road	2	<36	Yes	539	550	1,140	1,220

Note: Gray shading represents a project induced deficiency resulting in improvement recommendations
[1] Pavement Width is defined as the width of the both travel lanes to roadside shoulders.
[2] Substandard rural roads are defined as rural, 2-lane roadway segments with travel lanes narrower than 12 feet and/or roadside shoulders narrower than 6 feet.

Table 16 – Cumulative Rural Roadway Functionality Evaluation

ID	Roadway Segment	Cumulative Roadways			ADT			
		Travel Lanes	Pavement Width[1] (ft)	Substandard?[2]	Cumulative	Cumulative plus MPU	Cumulative plus Cargo	Cumulative plus MPU plus Cargo
1	Elverta Road, Garden Highway to Earhart Drive	2	<36	Yes	600	600	600	600
2	Elverta Road, Earhart Drive to Power Line Road	2	<36	Yes	900	900	5,260	5,260
3	Elverta Road, Power Line Road to Metro Air Parkway	2	<36	Yes	5,700	5,700	9,270	9,270
4	Elverta Road, Metro Air Parkway to Lone Tree Road	4	N/A due to General Plan widening improvements					
5	Elverta Road, Lone Tree Road to SR-99	4	N/A due to General Plan widening improvements					
6	Power Line Road, Elverta Road to Road A	2	<36	Yes	3,000	3,000	3,780	3,780
7	Power Line Road, Road A to Road D	2	<36	Yes	1,100	1,100	1,880	1,880
8	Power Line Road, Road D to Skyking Road	2	<36	Yes	5,200	5,200	5,980	5,980

Note: Gray shading represents a project induced deficiency resulting in improvement recommendations

[1] Pavement Width is defined as the width of the both travel lanes to roadside shoulders.
[2] Substandard rural roads are defined as rural, 2-lane roadway segments with travel lanes narrower than 12 feet and/or roadside shoulders narrower than 6 feet.

Freeway Analysis Results

The analysis of each of the identified freeway segments, ramps, and merge areas was conducted. The results show that some of the segments analyzed experience high vehicle density and associated poor LOS. It is recommended that future studies and design of I-5 and SR-99 consider existing and anticipated capacity constraints as documented in this report.

Table 17 and Table 18 present the freeway LOS for the Existing (2020) scenarios for I-5 and SR-99 respectively. Table 19 and Table 20 present the freeway LOS for the Cumulative scenarios for I-5 and SR-99 respectively. Analysis worksheets are provided in Appendix E.

Table 17 – Existing (2020) Freeway Level of Service (I-5)

I-5				Existing (2020)		Existing plus MPU		Existing plus Cargo		Existing plus Cargo plus MPU	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS
Southbound	North of Airport Boulevard Off-Ramp	Basic	AM	19.6	C	26.3	D	19.4	C	19.4	C
			PM	22.8	C	22.8	C	22.8	C	22.8	C
	Airport Boulevard Off-Ramp	Diverge	AM	28.8	D	39.1	E	28.9	D	28.9	D
			PM	29.2	D	29.2	D	29.2	D	29.2	D
	Airport Boulevard Loop On-Ramp	Merge	AM	22.0	C	30.8	D	22.1	C	22.1	C
			PM	27.5	C	37.1	F	27.4	C	36.8	F
	North of SR-99 Northbound Off-Ramp	Basic	AM	15.0	B	15.0	B	15.0	B	15.0	B
			PM	30.9	D	56.7	F	30.7	D	55.4	F
	North of SR-99 Southbound On-Ramp	Basic	AM	12.3	B	12.3	B	12.3	B	12.3	B
			PM	20.3	C	34.0	D	20.1	C	33.4	D
Northbound	North of Airport Blvd Diagonal On-Ramp	Basic	AM	18.3	C	6.7	A	18.5	C	6.7	A
			PM	15.4	B	10.3	A	15.6	B	10.5	A
	Airport Blvd Diagonal On-Ramp	Merge	AM	25.1	C	11.4	B	25.2	C	11.4	B
			PM	22.0	C	15.7	B	22.1	C	16.0	B
	Airport Blvd Loop On-Ramp	Merge	AM	23.1	C	6.8	A	23.2	C	6.8	A
			PM	18.9	B	9.2	A	19.0	B	9.3	A
	Airport Blvd Off-Ramp	Diverge	AM	21.6	C	21.6	C	21.6	C	21.6	C
			PM	16.1	B	16.1	B	16.1	B	16.1	B
	North of SR-99 Southbound Diagonal On-Ramp	Basic	AM	30.3	D	30.3	D	30.3	D	30.3	D
			PM	23.8	C	23.8	C	23.8	C	23.8	C
	North of SR-99 Northbound Off-Ramp	Basic	AM	20.5	C	20.5	C	20.5	C	20.5	C
			PM	20.3	C	20.3	C	20.3	C	20.3	C

Notes: a- Density measured in passenger cars/lane/mile (pc/ln/mi)
b- **Bold** represents unacceptable operations
c – Gray shading represents a project induced deficiency resulting in improvement recommendations

Table 18 – Existing (2020) Freeway Level of Service (SR-99)

SR-99				Existing (2020)		Existing plus MPU		Existing plus Cargo		Existing plus Cargo plus MPU	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS
Southbound	North of Elverta Road Off-Ramp	Basic	AM	16.5	B	16.5	B	16.5	B	16.5	B
			PM	13.2	B	13.2	B	13.2	B	13.2	B
	Elverta Road Off-Ramp	Diverge	AM	19.3	B	19.3	B	19.3	B	19.3	B
			PM	15.1	B	15.1	B	15.1	B	15.1	B
	Elverta Road Loop On-Ramp	Merge	AM	22.9	C	23.5	C	22.7	C	22.7	C
			PM	18.0	B	18.1	B	17.8	B	18.0	B
	Elverta Rd Diagonal On-Ramp	Merge	AM	23.2	C	23.8	C	23.3	C	23.3	C
			PM	18.3	B	18.5	B	19.3	B	19.5	B
	North of Elkhorn Boulevard Off-Ramp	Basic	AM	17.8	B	18.4	C	17.9	B	17.9	B
			PM	13.4	B	13.6	B	14.3	B	14.5	B
	Elkhorn Boulevard Off-Ramp	Diverge	AM	23.7	C	24.4	C	23.8	C	23.8	C
			PM	18.3	B	18.4	B	19.4	B	19.6	B
	Elkhorn Boulevard Loop On-Ramp	Merge	AM	28.7	D	29.3	D	28.9	D	28.9	D
			PM	20.3	C	20.5	C	21.2	C	21.4	C
	Elkhorn Boulevard Diagonal On-Ramp	Merge	AM	30.5	D	31.1	D	31.2	D	31.2	D
			PM	23.8	C	23.9	C	24.7	C	24.9	C
	North of I-5 Northbound Off-Ramp	Basic	AM	24.6	C	25.3	C	25.5	C	25.5	C
			PM	17.7	B	17.9	B	18.6	C	18.8	C
	I-5 Northbound Off-Ramp	Diverge	AM	28.9	D	29.5	D	29.7	D	29.7	D
			PM	21.6	C	21.8	C	22.7	C	22.8	C
	South of I-5 Northbound Off-Ramp	Basic	AM	16.6	B	17.2	B	17.3	B	17.3	B
			PM	14.9	B	15.1	B	15.8	B	15.9	B

Notes: a- Density measured in passenger cars/lane/mile (pc/ln/mi)
b- **Bold** represents unacceptable operations
c – Gray shading represents a project induced deficiency resulting in improvement recommendations

Table 18 – Existing (2020) Freeway Level of Service (SR-99) (continued)

SR-99				Existing (2020)		Existing plus MPU		Existing plus Cargo		Existing plus Cargo plus MPU	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS
Northbound	North of Elverta Road Diagonal On-Ramp	Basic	AM	10.8	A	10.4	A	9.5	A	9.5	A
			PM	24.2	C	23.1	C	23.8	C	22.8	C
	Elverta Rd Diagonal On-Ramp	Merge	AM	15.2	B	14.7	B	13.7	B	13.7	B
			PM	29.4	D	28.5	D	29.0	D	28.1	D
	Elverta Road Loop On-Ramp	Merge	AM	14.6	B	14.0	B	13.0	B	13.0	B
			PM	28.7	D	27.8	C	28.2	D	27.3	C
	Elverta Road Off-Ramp	Diverge	AM	4.3	A	4.0	A	4.4	A	4.4	A
			PM	24.2	C	23.7	C	24.3	C	23.7	C
	North of Elkhorn Boulevard Diagonal On-Ramp	Basic	AM	11.2	B	11.0	A	11.3	B	11.3	B
			PM	29.9	D	29.3	D	30.0	D	29.2	D
	Elkhorn Boulevard Diagonal On-Ramp	Merge	AM	15.7	B	15.5	B	15.8	B	15.8	B
			PM	33.8	D	33.4	D	33.8	D	33.3	D
	Elkhorn Boulevard Loop On-Ramp	Merge	AM	14.8	B	14.5	B	14.7	B	14.7	B
			PM	32.5	D	32.1	D	32.5	D	32.0	D
	Elkhorn Boulevard Off-Ramp	Diverge	AM	21.3	C	21.3	C	21.3	C	21.3	C
			PM	**44.3**	**F**	**44.3**	**F**	**44.3**	**F**	**44.3**	**F**
	North of I-5 Southbound On-Ramp	Basic	AM	16.1	B	16.1	B	16.1	B	16.1	B
			PM	**47.7**	**F**	**47.7**	**F**	**47.7**	**F**	**47.7**	**F**
	I-5 Southbound On-Ramp	Merge	AM	22.2	C	22.2	C	22.2	C	22.2	C
			PM	**42.8**	**F**	**42.8**	**F**	**42.8**	**F**	**42.8**	**F**
	South of I-5 Southbound On-Ramp	Basic	AM	13.3	B	13.3	B	13.3	B	13.3	B
			PM	30.1	D	30.1	D	30.1	D	30.1	D

Notes: a- Density measured in passenger cars/lane/mile (pc/ln/mi)
b- **Bold** represents unacceptable operations
c – Gray shading represents a project induced deficiency resulting in improvement recommendations

Table 19 – Cumulative Freeway Level of Service (I-5)

I-5				Cumulative		Cumulative plus MPU		Cumulative plus Cargo		Cumulative plus Cargo plus MPU	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS
Southbound	North of Airport Boulevard Off-Ramp	Basic	AM	22.1	C	26.0	C	21.9	C	25.7	C
			PM	34.1	D	**51.5**	**F**	33.9	D	**51.2**	**F**
	Airport Boulevard Off-Ramp	Diverge	AM	27.6	C	31.2	D	27.4	C	31.0	D
			PM	37.2	E	**45.1**	**F**	37.1	E	**45.0**	**F**
	Airport Boulevard Loop On-Ramp	Merge	AM	33.3	D	**47.2**	**F**	33.3	D	**47.2**	**F**
			PM	**51.3**	**F**	**71.9**	**F**	**51.3**	**F**	**72.1**	**F**
	North of Metro Parkway Off-Ramp	Basic	AM	17.5	B	17.5	B	17.5	B	17.5	B
			PM	28.2	D	28.2	D	28.2	D	28.2	D
	Metro Parkway Off-Ramp	Diverge	AM	20.8	C	20.8	C	20.8	C	20.8	C
			PM	31.4	D	31.4	D	31.4	D	31.4	D
	Metro Parkway Loop On-Ramp	Merge	AM	24.1	C	23.7	C	25.0	C	24.6	C
			PM	36.4	E	36.1	E	36.5	F	36.2	E
	Metro Parkway Diagonal On-Ramp	Merge	AM	23.6	C	23.3	C	24.6	C	24.2	C
			PM	**37.1**	**F**	**36.9**	**F**	**37.2**	**F**	**37.0**	**F**
	North of SR-99 Northbound Off-Ramp	Weave	AM	24.4	B	24.0	C	25.5	B	25.1	C
			PM	50.6	E	49.7	E	50.9	E	50.0	E
	North of SR-99 Southbound On-Ramp	Basic	AM	20.0	C	19.6	C	20.9	C	20.5	C
			PM	31.2	D	30.8	D	31.3	D	30.9	D

Notes: a- Density measured in passenger cars/lane/mile (pc/ln/mi)
b- **Bold** represents unacceptable operations
c - Gray shading represents a project induced deficiency resulting in improvement recommendations

Table 19 – Cumulative Freeway Level of Service (I-5) (continued)

I-5				Cumulative		Cumulative plus MPU		Cumulative plus Cargo		Cumulative plus Cargo plus MPU	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS
Northbound	North of Airport Blvd Diagonal On-Ramp	Basic	AM	22.4	C	13.9	B	23.5	C	14.9	B
			PM	24.0	C	18.8	C	24.2	C	19.0	C
	Airport Blvd Diagonal On-Ramp	Merge	AM	28.0	C	18.9	B	29.0	D	20.1	C
			PM	29.3	D	24.3	C	29.5	D	24.4	C
	Airport Blvd Loop On-Ramp	Merge	AM	25.5	C	13.9	B	26.5	C	15.1	B
			PM	25.6	C	17.3	B	25.7	C	17.5	B
	Airport Blvd Off-Ramp	Diverge	AM	23.1	C	23.1	C	24.3	C	24.4	C
			PM	24.1	C	24.1	C	24.2	C	24.2	C
	North of Metro Parkway Diagonal On-Ramp	Basic	AM	32.6	D	32.6	D	34.3	D	34.5	D
			PM	34.1	D	34.1	D	34.2	D	34.2	D
	Metro Parkway Diagonal On-Ramp	Merge	AM	31.4	D	31.4	D	32.3	D	32.4	D
			PM	32.1	D	32.1	D	32.2	D	32.2	D
	Metro Parkway Loop On-Ramp	Merge	AM	22.4	C	22.3	C	22.4	C	22.4	C
			PM	20.6	C	20.5	C	20.6	C	20.5	C
	Metro Parkway Off-Ramp	Diverge	AM	37.7	E	37.7	E	37.7	E	37.7	E
			PM	33.2	D	33.2	D	33.2	D	33.2	D
	North of SR-99 Southbound Diagonal On-Ramp	Basic	AM	33.2	D	33.2	D	33.2	D	33.2	D
			PM	27.0	D	27.0	D	27.0	D	27.0	D
	North of SR-99 Northbound Off-Ramp	Basic	AM	22.4	C	22.4	C	22.4	C	22.4	C
			PM	23.1	C	23.1	C	23.1	C	23.1	C

Notes: a- Density measured in passenger cars/lane/mile (pc/ln/mi)
b- **Bold** represents unacceptable operations
c - Gray shading represents a project induced deficiency resulting in improvement recommendations

Table 20 – Cumulative Freeway Level of Service (SR-99)

SR-99				Cumulative		Cumulative plus MPU		Cumulative plus Cargo		Cumulative plus Cargo plus MPU	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS
Southbound	North of Elverta Road Off-Ramp	Basic	AM	35.9	E	35.9	E	35.9	E	35.9	E
			PM	17.1	B	17.1	B	17.1	B	17.1	B
	Elverta Road Off-Ramp	Diverge	AM	36.3	E	36.3	E	36.3	E	36.3	E
			PM	19.9	B	19.9	B	19.9	B	19.9	B
	Elverta Road Loop On-Ramp	Merge	AM	32.7	D	30.1	D	32.7	D	30.2	D
			PM	20.5	C	20.5	C	20.5	C	20.5	C
	Elverta Rd Diagonal On-Ramp	Merge	AM	33.7	D	31.0	D	33.7	D	31.1	D
			PM	23.2	C	23.1	C	23.2	C	23.1	C
	North of Elkhorn Boulevard Off-Ramp	Basic	AM	29.9	D	26.2	D	29.9	D	26.3	D
			PM	17.9	B	17.8	B	17.9	B	17.8	B
	Elkhorn Boulevard Off-Ramp	Diverge	AM	35.2	E	32.3	D	35.2	E	32.4	D
			PM	23.8	C	23.7	C	23.8	C	23.7	C
	Elkhorn Boulevard Loop On-Ramp	Merge	AM	33.7	D	29.0	D	33.5	D	29.0	D
			PM	21.8	C	18.7	B	21.8	C	18.7	B
	Elkhorn Boulevard Diagonal On-Ramp	Merge	AM	38.4	E	34.0	D	38.2	E	34.0	D
			PM	32.8	D	29.7	D	32.8	D	29.7	D
	North of I-5 Northbound Off-Ramp	Basic	AM	37.0	E	29.5	D	36.6	E	29.5	D
			PM	28.3	D	24.4	C	28.3	D	24.4	C
	I-5 Northbound Off-Ramp	Diverge	AM	37.8	E	33.0	D	37.6	E	33.0	D
			PM	32.0	D	28.7	D	32.0	D	28.7	D
	South of I-5 Northbound Off-Ramp	Basic	AM	25.0	C	20.1	C	24.7	C	20.1	C
			PM	24.3	C	21.0	C	24.3	C	21.0	C

Notes: a- Density measured in passenger cars/lane/mile (pc/ln/mi)
b- **Bold** represents unacceptable operations
c - Gray shading represents a project induced deficiency resulting in improvement recommendations

Table 20 – Cumulative Freeway Level of Service (SR-99) (continued)

SR-99				Cumulative		Cumulative plus MPU		Cumulative plus Cargo		Cumulative plus Cargo plus MPU	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS	Density[a]	LOS
Northbound	North of Elverta Road Diagonal On-Ramp	Basic	AM	8.2	A	9.6	A	8.2	A	9.6	A
			PM	**53.8**	**F**	**65.8**	**F**	**53.8**	**F**	**65.3**	**F**
	Elverta Rd Diagonal On-Ramp	Merge	AM	12.0	B	13.7	B	12.0	B	13.6	B
			PM	**44.0**	**F**	**46.7**	**F**	**44.0**	**F**	**46.6**	**F**
	Elverta Road Loop On-Ramp	Merge	AM	9.9	A	11.5	B	9.9	A	11.5	B
			PM	**41.6**	**F**	**43.9**	**F**	**41.6**	**F**	**43.8**	**F**
	Elverta Road Off-Ramp	Diverge	AM	2.9	A	4.8	A	2.9	A	4.8	A
			PM	**33.8**	**F**	**34.1**	**F**	**33.8**	**F**	**34.1**	**F**
	North of Elkhorn Boulevard Diagonal On-Ramp	Basic	AM	10.2	A	11.6	B	10.2	A	11.6	B
			PM	**48.5**	**F**	**49.3**	**F**	**48.5**	**F**	**49.3**	**F**
	Elkhorn Boulevard Diagonal On-Ramp	Merge	AM	14.5	B	16.2	B	14.5	B	16.2	B
			PM	**42.5**	**F**	**42.7**	**F**	**42.5**	**F**	**42.7**	**F**
	Elkhorn Boulevard Loop On-Ramp	Merge	AM	12.6	B	14.1	B	12.6	B	14.1	B
			PM	40.3	E	40.4	E	40.3	E	40.4	E
	Elkhorn Boulevard Off-Ramp	Diverge	AM	25.0	C	25.0	C	25.0	C	25.0	C
			PM	**53.8**	**F**	**53.8**	**F**	**53.8**	**F**	**53.8**	**F**
	North of I-5 Southbound On-Ramp	Basic	AM	19.2	C	19.2	C	19.2	C	19.2	C
			PM	**94.6**	**F**	**94.6**	**F**	**94.6**	**F**	**94.6**	**F**
	I-5 Southbound On-Ramp	Merge	AM	25.6	C	25.6	C	25.6	C	25.6	C
			PM	**51.4**	**F**	**51.4**	**F**	**51.4**	**F**	**51.4**	**F**
	South of I-5 Southbound On-Ramp	Basic	AM	16.3	B	16.3	B	16.3	B	16.3	B
			PM	**48.5**	**F**	**48.5**	**F**	**48.5**	**F**	**48.5**	**F**

Notes: a- Density measured in passenger cars/lane/mile (pc/ln/mi)
b- **Bold** represents unacceptable operations
c - Gray shading represents a project induced deficiency resulting in improvement recommendations

Signal Warrant Results

Peak-hour traffic signal warrant analyses were conducted for the "Cargo" component of the Proposed Project at Intersection #2 (Elverta Road and Earhart Drive). The shift change scenario was included in this evaluation. Additionally, peak-hour traffic signal warrant analyses were conducted at Intersection #3 (Elverta Road and Power Line Road) for the typical peak-hours and the shift change scenario. Traffic signal warrant worksheets are provided in Appendix F.

Intersection 2 – Elverta Road and Earhart Drive
The peak hour warrant was satisfied for the Cumulative plus MPU plus Cargo Shift Change Scenario.

Intersection 3 – Elverta Road and Power Line Road
The peak hour warrant was not satisfied for the Cumulative plus MPU plus Cargo Scenario for the traditional peak-hours.
The peak hour warrant was satisfied for the Cumulative plus MPU plus Cargo Shift Change Scenario.

Based on these findings and to accommodate safe and efficient vehicle movements at these intersections, it is recommended that a traffic signal be installed at Intersection #2 (Elverta Road and Earhart Drive) and at Intersection #3 (Elverta Road and Power Line Road). The peak-hour signal warrant was not satisfied at Intersection #3 (Elverta Road and Power Line Road) for the typical peak-hours. However, the peak-hour warrant was satisfied for the Cumulative plus MPU plus Cargo Shift Change Scenario.

Queuing Analysis Results

Vehicle queuing was evaluated for the analysis scenarios as summarized in Table 21 through Table 29 using the 95% queue as calculated in Synchro software. Analysis worksheets for anticipated vehicle queues under No Build and Build Conditions are provided in Appendix B for the Existing (2020) scenarios and Appendix C for the Cumulative scenarios. Sacramento County Improvement Standards were used to develop assumptions for the turn pocket lengths for new or reconstructed intersections. A list of turn pocket length assumptions is provided below:

- Collector turn pocket length at arterial or thoroughfare: 175-feet
- Arterial turn pocket length at collector: 180-feet to 300-feet
- Arterial turn pocket length at arterial or thoroughfare: 375-feet
- Thoroughfare turn pocket length at arterial or thoroughfare: 400-feet

Table 21 – Elverta Road @ Earhart Drive (#2) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
Elverta Road @ Earhart Drive	NBR				
Existing		175	0	175	25
Existing plus Cargo			25		50
Existing plus Cargo plus MPU			25		50
Cumulative			3		6
Cumulative plus Cargo			15		18
Cumulative plus Cargo plus MPU			15		18
	EBR				
Existing		175	0	175	0
Existing plus Cargo			0		0
Existing plus Cargo plus MPU			0		0
Cumulative			10		10
Cumulative plus Cargo			15		14
Cumulative plus Cargo plus MPU			15		14
	WBL				
Existing		300	25	300	0
Existing plus Cargo			25		25
Existing plus Cargo plus MPU			25		25
Cumulative			22		9
Cumulative plus Cargo			144		57
Cumulative plus Cargo plus MPU			147		60

Table 22 – Elverta Road @ SR-99 SB Ramps (#6) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
Elverta Road @ SR-99 SB Ramps	SBL				
Existing		1000+	22	1000+	21
Existing plus Cargo			23		21
Existing plus Cargo plus MPU			23		24
Cumulative			28		48
Cumulative plus Cargo			29		48
Cumulative plus Cargo plus MPU			35		62
	SBR				
Existing		650	19	650	0
Existing plus Cargo			21		4
Existing plus Cargo plus MPU			21		4
Cumulative			47		33
Cumulative plus Cargo			47		33
Cumulative plus Cargo plus MPU			155		37

Table 23 – Elverta Road @ SR-99 NB Ramps (#7) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
Elverta Road @ SR-99 NB Ramps	NBL				
Existing		495	150	495	110
Existing plus Cargo			151		114
Existing plus Cargo plus MPU			153		118
Cumulative			185		76
Cumulative plus Cargo			185		76
Cumulative plus Cargo plus MPU			192		81
	NBR				
Existing		495	0	495	0
Existing plus Cargo			0		0
Existing plus Cargo plus MPU			07		0
Cumulative			10		33
Cumulative plus Cargo			10		39
Cumulative plus Cargo plus MPU			11		46
	WBR				
Existing		290	0	290	0
Existing plus Cargo			0		0
Existing plus Cargo plus MPU			0		0
Cumulative			50		45
Cumulative plus Cargo			50		45
Cumulative plus Cargo plus MPU			51		48

Table 24 – Elkhorn Boulevard @ Power Line Road (#8) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
Elkhorn Boulevard @ Power Line Road	NBL				
Cumulative		175	**239**	175	**179**
Cumulative plus MPU			**264**		**198**
Cumulative plus Cargo plus MPU			**264**		**198**
	NBR				
Cumulative		175	40	175	138
Cumulative plus MPU			42		153
Cumulative plus Cargo plus MPU			42		**466**
	SBL				
Cumulative		175	24	175	24
Cumulative plus MPU			24		24
Cumulative plus Cargo plus MPU			**202**		65
	EBL				
Cumulative		300	126	300	70
Cumulative plus MPU			149		91
Cumulative plus Cargo plus MPU			149		91
	WBL				
Cumulative		300	285	300	179
Cumulative plus MPU			295		179
Cumulative plus Cargo plus MPU			295		230
	WBR				
Cumulative		300	0	300	0
Cumulative plus MPU			0		0
Cumulative plus Cargo plus MPU			0		0
Note: Shaded and bolded cells indicate queue lengths exceed available storage capacity.					

Table 25 – Elkhorn Boulevard @ Metro Air Parkway (#9) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95^{th} % Queue (ft)	Available Storage (ft)	95^{th} % Queue (ft)
Elkhorn Boulevard @ Metro Air Parkway	NBL				
Cumulative		400	14	400	14
Cumulative plus MPU			14		14
Cumulative plus Cargo plus MPU			14		14
	SBL				
Cumulative		400	48	400	229
Cumulative plus MPU			55		240
Cumulative plus Cargo plus MPU			55		240
	EBL				
Cumulative		375	93	375	169
Cumulative plus MPU			103		**439**
Cumulative plus Cargo plus MPU			103		**428**
	WBL				
Cumulative		400	169	400	138
Cumulative plus MPU			169		138
Cumulative plus Cargo plus MPU			276		142
Note: Shaded and bolded cells indicate queue lengths exceed available storage capacity.					

Table 26 – Elkhorn Boulevard @ SR-99 NB Ramps (#12) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95^{th} % Queue (ft)	Available Storage (ft)	95^{th} % Queue (ft)
Elkhorn Boulevard @ SR-99 NB Ramps	NBL				
Existing		1000+	151	1000+	112
Existing plus MPU			151		114
Existing plus Cargo plus MPU			153		118
Cumulative			1122		431
Cumulative plus MPU			1136		438
Cumulative plus Cargo plus MPU			1136		438

Table 27 – Meister Way @ Metro Air Parkway (#21) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
Meister Way @ Metro Air Parkway	NBL				
Cumulative		400	56	400	70
Cumulative plus Cargo			56		91
Cumulative plus Cargo plus MPU			80		113
	NBR				
Cumulative		400	0	400	28
Cumulative plus Cargo			0		43
Cumulative plus Cargo plus MPU			0		51
	SBL				
Cumulative		400	90	400	239
Cumulative plus Cargo			90		257
Cumulative plus Cargo plus MPU			90		257
	EBL				
Cumulative		175	27	175	42
Cumulative plus Cargo			27		42
Cumulative plus Cargo plus MPU			59		101
	EBR				
Cumulative		175	8	175	0
Cumulative plus Cargo			**385**		0
Cumulative plus Cargo plus MPU			**405**		0
	WBL				
Cumulative		375	310	375	107
Cumulative plus Cargo			310		107
Cumulative plus Cargo plus MPU			310		107

Note: Shaded and bolded cells indicate queue lengths exceed available storage capacity.

Table 28 – I-5 NB Ramps @ Metro Air Parkway (#22) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
I-5 NB Ramps @ Metro Air Parkway	SBR				
Cumulative		400	0	400	0
Cumulative plus Cargo			69		63
Cumulative plus Cargo plus MPU			71		63
	WBL				
Cumulative		1000+	12	1000+	12
Cumulative plus Cargo			12		12
Cumulative plus Cargo plus MPU			12		12
	WBR				
Cumulative		1000+	550	1000+	305
Cumulative plus Cargo			550		305
Cumulative plus Cargo plus MPU			550		311

Table 29 – I-5 SB Ramps @ Metro Air Parkway (#23) Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
I-5 SB Ramps @ Metro Air Parkway	NBR				
Cumulative		1000+	25	1000+	36
Cumulative plus Cargo			26		36
Cumulative plus Cargo plus MPU			27		36
	SBR				
Cumulative		1000+	0	1000+	165
Cumulative plus Cargo			25		172
Cumulative plus Cargo plus MPU			25		179
	EBL				
Cumulative		1000+	194	1000+	122
Cumulative plus Cargo			200		122
Cumulative plus Cargo plus MPU			228		135
	EBR				
Cumulative		1000+	16	1000+	26
Cumulative plus Cargo			16		26
Cumulative plus Cargo plus MPU			18		26

Deficiencies and Improvements

<u>Standards of Deficiency</u>

Sacramento County *Traffic Impact Analysis Guidelines*[9] were referenced to identify deficiencies at the study area intersections and roadway segments. The following criteria were used:

- *Roadways Segments*: The project is considered to have a significant effect if it would:
  - result in a roadway segment operating at an acceptable LOS (E or better) to deteriorate to an unacceptable LOS; or
  - increase the V/C ratio by more than 0.05 at a roadway segment that is operating at an unacceptable LOS without the project.
- *Signalized Intersections*: The project is considered to have a significant effect if it would:
  - result in a signalized intersection operating at an acceptable LOS to deteriorate to an unacceptable LOS; or
  - increase the average delay by more than 5 seconds at a signalized intersection that is operating at an unacceptable LOS without the project.
- *Unsignalized Intersections*: The project is considered to have a significant effect if it would:
  - result in an unsignalized intersection movement/approach operating at an acceptable LOS to deteriorate to an unacceptable LOS, and also cause the intersection to meet a traffic signal warrant; or
  - for an unsignalized intersection that meets a signal warrant, increase the delay by more than 5 seconds at a movement/approach that is operating at an unacceptable LOS without the project.

Based on the Caltrans' *Transportation Concept Report* for SR-99, LOS E or better is acceptable and project induced deficiencies resulted in improvement recommendations if LOS deteriorated to LOS F or if there was a 5-percent increase in density on a segment already experiencing LOS F without the project traffic.

For I-5, based on the January 14, 2020, *Caltrans Traffic Congestion and Safety Issues on I-5 and Airport Boulevard Memorandum*, a project induced deficiency resulting in an improvement recommendation was prepared if the density of the segment increased by 5-pecent on a facility already experiencing LOS E without traffic, or if the project traffic deteriorated the facility to LOS F.

Intersection queue storage deficiencies were determined based on the anticipated project traffic exceeding the existing or planned storage.

<u>Deficiencies and Improvements</u>

The evaluation revealed that several intersection improvements, freeway improvements, and intersection queue storage improvements, are needed for the Existing (2020) and Cumulative Conditions to improve the roadway network due to the project triggered deficiencies. The recommendations to improve the deficiencies are described in the following sections. Consistent with the County's guidelines, the project applicant(s) will be responsible for improving upon the cumulative deficiencies by providing a fair share contribution towards the implementation of recommended improvements for the intersection or roadway segment to an acceptable LOS, or to a level that is equal to or better than pre-project operations.

Intersections (Master Plan Update)

The following intersection deficiencies were identified as part of the Proposed Master Plan Update:

Deficiency MPU-1- Elkhorn Boulevard @ SR-99 Northbound Ramps (#12)

In the AM peak-hour, this intersection is expected to exceed deficiency thresholds for unacceptable operations under Cumulative Conditions due to the proposed MPU project. Because this deficiency is projected to occur when project traffic is added to future traffic, this is a cumulative deficiency.

Improvement MPU-1 – Install dual northbound left turn lane to accommodate off-ramp volumes and improve operations.

Deficiency MPU-2 – Airport Boulevard @ I-5 Northbound Ramps (#13)

This intersection is expected to exceed deficiency thresholds for unacceptable operations under Existing (2020) Conditions in the AM and PM peak-hours, and is expected to experience an increase in delay due to the proposed MPU project as well as in the Existing MPU plus Cargo scenario. In the Cumulative scenario, deficiency was also determined with the addition of the proposed MPU project for the AM and PM peak-hours, as well as for the MPU plus Cargo scenario.

Improvement MPU-2 – When warranted, install a traffic signal or roundabout as recommended as the result of an Intersection Control Evaluation (ICE) to provide improved access from the side street.

Deficiency MPU-3- Airport Boulevard @ I-5 Southbound Ramps (#14)

This intersection is expected to exceed deficiency thresholds for unacceptable operations under Existing (2020) Conditions in the AM peak-hour and is expected to experience an increase in delay due to the proposed MPU project, as well as in the PM peak-hour of the Existing MPU plus Cargo scenario. In the Cumulative scenario, deficiency was also determined with the addition of the proposed MPU project for the PM peak-hour as well as for the MPU plus Cargo scenario.

Improvement MPU-3 – When warranted, install a traffic signal or roundabout as recommended as the result of an Intersection Control Evaluation (ICE) to provide improved access from the minor side street.

With the recommended improvements implemented, the LOS at each of the listed intersections improved to acceptable levels as shown in Table 30 for the Existing (2020) and Table 31 Cumulative. Detailed calculations are included in Appendix G.

Table 30 – Existing (2020) Intersection Level of Service Improved

ID	Intersection	Control	Peak Hour	Existing plus MPU		Existing plus MPU (Improved)		Existing plus MPU plus Cargo		Existing plus MPU plus Cargo (Improved)	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
13	Airport Boulevard @ I-5 Northbound Ramps	Existing SSSC Proposed Signal	AM	0.3 (55.5)	A (F)	3.4	A	0.4 (57.6)	A (F)	3.6	A
			PM	0.5 (138.0)	A (F)	32.0	C	0.8 (163.9)	A (F)	49.5	D
14	Airport Boulevard @ I-5 Southbound Ramps	Existing SSSC Proposed Signal	AM	15.0 (21.4)	B (C)	N/A		18.1 (27.7)	C (D)	N/A	
			PM	40.2 (86.1)	E (F)	11.6	B	44.3 (95.1)	E (F)	11.7	B

Table 31 – Cumulative Intersection Level of Service Improved

ID	Intersection	Control	Peak Hour	Cumulative plus MPU		Cumulative plus MPU (Improved)		Cumulative plus MPU plus Cargo		Cumulative plus MPU plus Cargo (Improved)	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
12	Elkhorn Boulevard @ SR-99 Northbound Ramps	Signal	AM	94.2	F	18.6	B	94.2	F	18.6	B
			PM	12.2	B	N/A		12.7	B	N/A	
13	Airport Boulevard @ I-5 Northbound Ramps	Existing SSSC Proposed Signal	AM	9.3 (254.6)	A (F)	5.3	A	7.0 (214.1)	A (F)	5.1	A
			PM	5.5 (418.1)	A (F)	21.6	C	5.4 (418.1)	A (F)	23.1	C
14	Airport Boulevard @ I-5 Southbound Ramps	Existing SSSC Proposed Signal	AM	47.4 (78.9)	F (F)	10.5	B	50.9 (87.1)	F (F)	10.5	B
			PM	149.6 (325.4)	F (F)	21.9	C	157.1 (341.4)	F (F)	22.8	C

Intersections (Cargo Facility)

None of the study area intersections were calculated to have deficiencies in the Existing (2020) Conditions with the addition of the proposed Cargo Facility under the traditional AM and PM peak-hours, thus no improvements are recommended as part of the deficiency analysis.

Deficiency Cargo-1 – Elverta Road @ Earhart Drive Road (#2)

Signalization of the intersection is assumed as a part of the project. However, analysis of the Shift Change scenario indicates queues resulting from the addition of the project require adequate storage accommodation.

> *Improvement Cargo-1* – Install dual northbound right-turn lanes with 175-feet of queue storage (adequate deceleration distance should be provided in addition to this storage). Install eastbound receiving lane to accept the #2 northbound right-turn lane. Install westbound dual left-turn lanes with 300-feet of queue storage (adequate deceleration distance should be provided in addition to this storage). Install southbound receiving lanes to accept the westbound left-turn lanes.

Deficiency Cargo-2 – Elverta Road @ Power Line Road (#3)

In the Shift Change scenario, this intersection is expected to exceed deficiency thresholds for unacceptable operations under Existing Conditions due the proposed cargo facility project.

> *Improvement Cargo-2* – Install a traffic signal. Install additional eastbound through lane to provide for two (2) through lanes from Earhart Drive to Power Line Road. Install eastbound receiving lane to accept the addition eastbound through approach lane.

Rural Roadway Functionality (Cargo Facility)

Deficiency Cargo-3 – Elverta Road, Earhart Drive to Power Line Road

The rural roadway segment of Elverta Road, between Earhart Drive and Power Line Road, would operate deficiently under Existing Conditions with the addition of the cargo facility because the addition of the cargo facility causes the average daily traffic volume to exceed 6,000.

> *Improvement Cargo-3* – This deficiency can be improved by reconstructing the rural roadway segment to the County standard of 12-foot vehicle lanes with 6-foot paved shoulders.

Deficiency Cargo-4 – Elverta Road, Power Line Road to Metro Air Parkway [Existing Conditions]

The rural roadway segment of Elverta Road, between Power Line Road and Metro Air Parkway, would operate deficiently under Existing Conditions with the addition of the cargo facility because the addition of the cargo facility causes the average daily traffic volume to exceed 6,000.

> *Improvement Cargo-4*– This deficiency can be improved by reconstructing the rural roadway segment to the County standard of 12-foot vehicle lanes with 6-foot paved shoulders.

Deficiency Cargo-5 – Elverta Road, Metro Air Parkway to Lone Tree Road

The rural roadway segment of Elverta Road, between Metro Air Parkway to Lone Tree Road, would operate deficiently under Existing Conditions with the addition of the cargo facility because the addition of the cargo facility causes the average daily traffic volume to exceed 6,000.

> *Improvement Cargo-5* – This deficiency can be improved by reconstructing the rural roadway segment to the County standard of 12-foot vehicle lanes with 6-foot paved shoulders.

Deficiency Cargo-6 – Elverta Road, Lone Tree Road to SR-99

The rural roadway segment of Elverta Road, between Lone Tree Road to SR-99, would operate deficiently under Existing Conditions with the addition of the cargo facility because the addition of the cargo facility causes the average daily traffic volume to exceed 6,000.

> *Improvement Cargo-6* – This deficiency can be improved by reconstructing the rural roadway segment to the County standard of 12-foot vehicle lanes with 6-foot paved shoulders.

Deficiency Cargo-7 – Elverta Road, Power Line Road to Metro Air Parkway [Cumulative Conditions]
The rural roadway segment of Elverta Road, between Power Line Road and Metro Air Parkway, would operate deficiently under Cumulative Conditions with the addition of the cargo facility because the addition of the cargo facility causes the average daily traffic volume to exceed 6,000.

> *Improvement Cargo-7* – This deficiency can be improved by reconstructing the rural roadway segment to the County standard of 12-foot vehicle lanes with 6-foot paved shoulders.

Deficient Freeway Segments
It should be noted that there are a number of freeway segments that are not significantly influenced by the proposed project operations, but that in the existing (2020) condition or the cumulative condition are shown to operate with substandard conditions (LOS F). For freeway segments operating deficiently under no project conditions, an increase in density of more than 1.0 passenger cars per hour per lane under plus project conditions was considered a project induced deficiency. The following is a summary of the freeway segments that were documented to operate at LOS F under the existing and cumulative baseline conditions:

- Existing (2020) Conditions Deficiencies:
  - SR-99 - Elkhorn Boulevard Off-Ramp (northbound)
  - SR-99 - North of I-5 Southbound On-Ramp (northbound)
  - SR-99 - I-5 Southbound On-Ramp (northbound)
- Cumulative Conditions Deficiencies:
  - I-5 - Metro Parkway Diagonal On-Ramp (southbound)
  - SR-99 - Elverta Road Off-Ramp (northbound)
  - SR-99 - North of Elkhorn Boulevard Diagonal On-Ramp (northbound)
  - SR-99 - Elkhorn Boulevard Diagonal On-Ramp (northbound)
  - SR-99 - Elkhorn Boulevard Off-Ramp (northbound)
  - SR-99 - North of I-5 Southbound On-Ramp (northbound)
  - SR-99 - I-5 Southbound On-Ramp (northbound)
  - SR-99 - South of I-5 Southbound On-Ramp (northbound)

Freeways (Master Plan Update)
The following freeway segment deficiencies were identified as part of the Proposed Master Plan Update:

> *Deficiency MPU-4 – I-5 Airport Boulevard Loop On-Ramp (southbound)*
> This merge freeway segment is expected to exceed deficiency thresholds for unacceptable operations under Existing (2020) Conditions in the PM peak-hour and is expected to experience an increase in delay due to the proposed MPU project, as well as in the Existing MPU plus Cargo scenario. In the Cumulative scenario, deficiency was also determined with the addition of the proposed MPU project for the PM peak-hours as well as for the MPU plus Cargo scenario.
>
>> *Improvement MPU-4* – This deficiency can be improved by adding a mainline lane to I-5 in the southbound direction. The freeway is anticipated to be improved to three lanes in the southbound and northbound directions in the future.
>
> *Deficiency MPU-5 – I-5 North of SR-99 Northbound Off-Ramp (southbound)*
> This basic freeway segment is expected to exceed deficiency thresholds for unacceptable operations under Existing (2020) Conditions in the PM peak-hour and is expected to experience an increase in delay due to the proposed MPU project, as well as in the Existing MPU plus Cargo scenario. It should be noted that in cumulative there is an auxiliary lane planned which improves operations and the deficiency was not calculated in the cumulative scenarios.
>
>> *Improvement MPU-5* – This deficiency can be improved by adding a mainline lane to I-5 in the southbound direction. The freeway is anticipated to be improved to three lanes in

the southbound and northbound directions in the future.

Deficiency MPU-6 – I-5 North of Airport Boulevard Off-Ramp (southbound)
This basic freeway segment is expected to exceed deficiency thresholds for unacceptable operations under Cumulative conditions in the PM peak-hour and is expected to experience an increase in delay due to the proposed MPU project, as well as in the PM peak hours of the MPU plus Cargo scenario. Because this deficiency is projected to occur when project traffic is added to future traffic, this is a cumulative deficiency.

Improvement MPU-6 – This deficiency can be improved by adding a mainline lane to I-5 in the southbound direction. The freeway is anticipated to be improved to three lanes in the southbound and northbound directions in the future.

Deficiency MPU-7 - I-5 Airport Boulevard Off-Ramp (southbound)
This diverge freeway segment is expected to exceed deficiency thresholds for unacceptable operations under Cumulative Conditions in the PM peak-hour and is expected to experience an increase in delay due to the proposed MPU project, as well as in the PM peak hours of the MPU plus Cargo scenario. Because this deficiency is projected to occur when project traffic is added to future traffic, this is a cumulative deficiency.

Improvement MPU-7 – This deficiency cpagesan be improved by adding a mainline lane to I-5 in the southbound direction. The freeway is anticipated to be improved to three lanes in the southbound and northbound directions in the future.

Deficiency MPU-8 – SR-99 North of Elverta Road Diagonal On-Ramp (northbound)
This basic freeway segment is expected to exceed deficiency thresholds for unacceptable operations under Cumulative Conditions in the PM peak-hour and is expected to experience an increase in delay due to the proposed MPU project. Because this deficiency is projected to occur when project traffic is added to future traffic, this is a cumulative deficiency.

Improvement MPU-8 – This deficiency can be improved by adding a mainline lane to SR-99 in the northbound direction.

Deficiency MPU-9 – SR-99 Elverta Rd Diagonal On-Ramp (northbound)
This merge freeway segment is expected to exceed deficiency thresholds for unacceptable operations under Cumulative Conditions in the PM peak-hour and is expected to experience an increase in delay due to the proposed MPU project. Because this deficiency is projected to occur when project traffic is added to future traffic, this is a cumulative deficiency.

Improvement MPU-9 – This deficiency can be improved by adding a mainline lane to SR-99 in the northbound direction.

Deficiency MPU-10 – SR-99 Elverta Road Loop On-Ramp (northbound)
This merge freeway segment is expected to exceed deficiency thresholds for unacceptable operations under Cumulative Conditions in the PM peak-hour and is expected to experience an increase in delay due to the proposed MPU project. Because this deficiency is projected to occur when project traffic is added to future traffic, this is a cumulative deficiency.

Improvement MPU-10 – This deficiency can be improved by adding a mainline lane to SR-99 in the northbound direction.

Improvement calculation worksheets are included in Appendix H.

Freeways (Cargo Facility)
There are no freeway deficiencies identified as part of the Proposed Cargo Facility:

Queuing (Master Plan Update)
Based on the queuing analysis conducted as part of this study the following improvements are recommended as part of the proposed Master Plan Update:

Deficiency MPU-11 – Elkhorn Boulevard @ Power Line Road (#8) Northbound Left Queue Storage
The proposed northbound left-turn storage capacity is deficient in the Cumulative scenario Cumulative plus MPU scenario and in the Cumulative plus Cargo plus MPU scenario.

Improvement MPU-11 – It is recommended that this intersection movement be monitored and if excess queuing is observed, then an additional 100-feet of storage is recommended to be provided for a total of 275-feet (adequate deceleration distance should be provided in addition to this storage).

Deficiency MPU-12 – Elkhorn Boulevard @ Metro Air Parkway (#9) Eastbound Left Queue Storage
The proposed eastbound left-turn storage capacity is deficient in the Cumulative plus MPU scenario and in the Cumulative plus Cargo plus MPU scenario.

Improvement MPU-12 – It is recommended that this intersection movement be monitored and if excess queuing is observed, then an additional 75-feet of storage is recommended to be provided for a total of 450-feet (adequate deceleration distance should be provided in addition to this storage).

Queuing (Cargo Facility)
Based on the queuing analysis conducted as part of this study the following improvements are recommended as part of the proposed Master Plan Update:

Deficiency Cargo-8–Metro Air Parkway @ Meister Way (#21) Eastbound Right Queue Storage
The proposed eastbound right-turn storage capacity is deficient in the Cumulative plus Cargo scenario and in the Cumulative plus Cargo plus MPU scenario.

Improvement Cargo-8 – It is recommended that this intersection movement be monitored and if excess queuing is observed, then an additional 250-feet of storage is recommended to be provided for a total of 425-feet (adequate deceleration distance should be provided in addition to this storage).

Queuing (Cargo Facility and Master Plan Update)
Based on the queuing analysis conducted as part of this study the following improvements are recommended as part of the proposed Cargo Facility and Master Plan Update:

Deficiency MPU+Cargo-1 Elkhorn Boulevard @ Power Line Road (#8) Northbound Right Queue Storage
The proposed northbound right-turn storage capacity is deficient in the Cumulative plus Cargo plus MPU scenario.

Improvement MPU+Cargo-1 – It is recommended that this intersection movement be monitored and if excess queuing is observed, then an additional 300-feet of storage is recommended to be provided for a total of 475-feet (adequate deceleration distance should be provided in addition to this storage).

Deficiency MPU+Cargo-2 Elkhorn Boulevard @ Power Line Road (#8) Southbound Left Queue Storage
The proposed southbound left-turn storage capacity is deficient in the Cumulative plus Cargo plus MPU scenario.

> *Improvement MPU+Cargo-2* – It is recommended that this intersection movement be monitored and if excess queuing is observed, then an additional 50-feet of storage is recommended to be provided for a total of 225-feet (adequate deceleration distance should be provided in addition to this storage).

CONCLUSIONS

Significant findings of this study regarding the proposed Master Plan Update include:

- An overall VMT reduction of 486,941 daily VMT is expected for the proposed Master Plan Update and a finding of less than significant impact for CEQA purposes.
- The MPU project generates vehicle trips that results in Existing (2020) Condition deficiencies which are recommended for improvement.
- It is recommended that the twelve (12) deficiencies related to the MPU project noted in this report be addressed by implementing the recommended improvements.

Significant findings of this study regarding the proposed cargo facility include:

- The average VMT per employee for the SACOG Region is 12.58 vehicle miles, while the average VMT per employee for the Cargo Facility is 22.59 vehicle miles. This result indicates a finding of significant impact for the proposed Cargo Facility for CEQA purposes.
- The study area intersections are not anticipated to be negatively impacted by the project traffic during the typical weekday, AM and PM commute peak hours.
- The shift change at the cargo facility was found to exceed the capacity of the existing roadway network immediately adjacent to the site and resulted in the following recommended improvements:
  - Intersection #2 – Elverta Road @ Earhart Drive
    - Install a traffic signal (as warranted and documented later in this report)
    - Install dual northbound right-turn lanes with 175-feet of queue storage (adequate deceleration distance should be provided in addition to this storage)
    - Install eastbound receiving lane to accept the #2 northbound right-turn lane
    - Install westbound dual left-turn lanes with 300-feet of queue storage (adequate deceleration distance should be provided in addition to this storage)
    - Install southbound receiving lanes to accept the westbound left-turn lanes
  - Intersection #3 – Elverta Road @ Power Line Road
    - Install a traffic signal (as warranted and documented later in this report)
    - Install additional eastbound through lane to provide for two (2) through lanes from Earhart Drive to Power Line Road
    - Install an eastbound receiving lane to accept the additional eastbound through approach lane
- The rural roadway segments on Elverta Road from Earhart Drive to SR-99 exceed 6,000 ADT due to the addition of project traffic. Based on functionality criteria, the project shall provide standard section (6-ft paved shoulder, two 12-ft travel lanes, 6-ft paved shoulder) on Elverta Road from Earhart Drive to SR-99.
- It is recommended that the eight (8) deficiencies related to the cargo facility traffic noted in this report be addressed by implementing the recommended improvements.

Significant findings of this study regarding the combination of the Master Plan Update and the cargo facility include:

- The combination of the cargo facility and the MPU projects results in Cumulative Condition queuing deficiencies.
- It is recommended that the two (2) deficiencies related to the combination of the cargo facility and the MPU projects noted in this report be addressed by implementing the recommended improvements.

Other Significant findings:

- Generally, the MPU project traffic interacts with roadways distinct from the proposed cargo facility.
- It is recommended that, with the implementation of the 4-lane roadway on Elverta Road (east of Metro Air Parkway) included in the General Plan, the intersection of Elverta Road and Metro Air Parkway include signalization.
- It is recommended to implement safety measures such as flexible delineators at the intersection of West Elverta Road with SR-99 Southbound Ramps (#6) to address the observation of compliance issues related to the prohibited westbound left-turn movements.
- It is recommended that future studies and design of I-5 and SR-99 consider existing and anticipated capacity constraints. This report documents the following LOS deficiencies in the Existing (2020) and Cumulative Conditions:
    - Existing (2020) Conditions Deficiencies:
        - SR-99 - Elkhorn Boulevard Off-Ramp (northbound)
        - SR-99 - North of I-5 Southbound On-Ramp (northbound)
        - SR-99 - I-5 Southbound On-Ramp (northbound)
    - Cumulative Conditions Deficiencies:
        - I-5 - Metro Parkway Diagonal On-Ramp (southbound)
        - SR-99 - Elverta Road Off-Ramp (northbound)
        - SR-99 - North of Elkhorn Boulevard Diagonal On-Ramp (northbound)
        - SR-99 - Elkhorn Boulevard Diagonal On-Ramp (northbound)
        - SR-99 - Elkhorn Boulevard Off-Ramp (northbound)
        - SR-99 - North of I-5 Southbound On-Ramp (northbound)
        - SR-99 - I-5 Southbound On-Ramp (northbound)
        - SR-99 - South of I-5 Southbound On-Ramp (northbound)

Appendix A

Traffic Count Data Sheets

National Data & Surveying Services

Intersection Turning Movement Count

Location: Garden Hwy & W Elverta Rd
City: Sacramento
Control: 1-Way Stop(WB)

Project ID: 20-07093-001
Date: 3/12/2020

Total

NS/EW Streets:	Garden Hwy				Garden Hwy				W Elverta Rd				W Elverta Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	4
6:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
6:30 AM	0	1	2	0	0	1	0	0	0	0	0	0	4	0	0	0	8
6:45 AM	0	0	0	0	0	4	0	0	0	0	0	0	4	0	0	0	8
7:00 AM	0	1	1	0	1	3	0	0	0	0	0	0	3	0	1	0	10
7:15 AM	0	0	1	0	1	2	0	0	0	0	0	0	3	0	0	0	7
7:30 AM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
7:45 AM	0	1	0	0	2	3	0	0	0	0	0	0	2	0	0	0	8
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	8	0	0	0	9
8:15 AM	0	1	0	0	1	3	0	0	0	0	0	0	3	0	0	0	8
8:30 AM	0	0	1	0	1	2	0	0	0	0	0	0	8	0	1	0	13
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	7	0	6	23	0	0	0	0	0	0	39	0	2	0	81
APPROACH %'s :	0.00%	36.36%	63.64%	0.00%	20.69%	79.31%	0.00%	0.00%					95.12%	0.00%	4.88%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	2	1	0	4	9	0	0	0	0	0	0	21	0	1	0	38
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.500	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.656	0.000	0.250	0.000	0.731
	0.750				0.650								0.611				

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	4	5	0	4	2	0	0	0	0	0	0	2	0	4	0	21
4:15 PM	0	5	7	0	0	2	0	0	0	0	0	0	2	0	0	0	16
4:30 PM	0	4	6	0	1	1	0	0	0	0	0	0	5	0	4	0	21
4:45 PM	0	3	7	0	1	1	0	0	0	0	0	0	1	0	3	0	16
5:00 PM	0	10	5	0	0	2	0	0	0	0	0	0	2	0	1	0	20
5:15 PM	0	6	3	0	2	2	0	0	0	0	0	0	3	0	2	0	18
5:30 PM	0	6	2	0	0	2	0	0	0	0	0	0	4	0	5	0	19
5:45 PM	0	5	2	0	2	1	0	0	0	0	0	0	0	0	3	0	13
6:00 PM	0	6	12	0	2	2	0	0	0	0	0	0	4	0	5	0	31
6:15 PM	0	0	8	0	3	2	0	0	0	0	0	0	0	0	1	0	14
6:30 PM	0	5	7	0	1	1	0	0	0	0	0	0	1	0	1	0	16
6:45 PM	0	2	3	0	4	0	0	0	0	0	0	0	1	0	4	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	56	67	0	20	18	0	0	0	0	0	0	25	0	33	0	219
APPROACH %'s :	0.00%	45.53%	54.47%	0.00%	52.63%	47.37%	0.00%	0.00%					43.10%	0.00%	56.90%	0.00%	
PEAK HR :	05:15 PM - 06:15 PM																TOTAL
PEAK HR VOL :	0	23	19	0	6	7	0	0	0	0	0	0	11	0	15	0	81
PEAK HR FACTOR :	0.000	0.958	0.396	0.000	0.750	0.875	0.000	0.000	0.000	0.000	0.000	0.000	0.688	0.000	0.750	0.000	0.653
	0.583				0.813								0.722				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Earhart Dr & W Elverta Rd
City: Sacramento
Control: 1-Way Stop(NB)

Project ID: 20-07093-002
Date: 3/12/2020

Total

NS/EW Streets:	Earhart Dr				Earhart Dr				W Elverta Rd				W Elverta Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0.5	0.5	0	0	0	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	1	0	0	0	0	0	0	2	0	0	12	3	0	0	18
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	13
6:30 AM	0	0	2	0	0	0	0	0	0	2	0	0	7	5	0	0	16
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	8
7:00 AM	0	0	4	0	0	0	0	0	0	2	0	0	3	2	0	0	11
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	2	3	0	0	7
7:30 AM	0	0	1	0	0	0	0	0	0	1	0	0	4	0	0	0	6
7:45 AM	0	0	2	0	0	0	0	0	0	2	0	0	3	2	0	0	9
8:00 AM	0	0	1	0	0	0	0	0	0	1	0	0	1	9	0	0	12
8:15 AM	0	0	1	0	0	0	0	0	0	1	0	0	3	3	0	0	8
8:30 AM	0	0	1	0	0	0	0	0	0	2	0	0	2	9	0	0	14
8:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	3	1	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	15	0	0	0	0	0	0	15	0	0	57	41	0	0	128
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	100.00%	0.00%	0.00%	58.16%	41.84%	0.00%	0.00%	
PEAK HR :	06:00 AM - 07:00 AM																TOTAL
PEAK HR VOL :	0	0	3	0	0	0	0	0	0	4	0	0	36	12	0	0	55
PEAK HR FACTOR :	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.692	0.600	0.000	0.000	0.764
	0.375								0.500				0.800				

	Earhart Dr				Earhart Dr				W Elverta Rd				W Elverta Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0.5	0.5	0	0	0	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	18	0	0	0	0	0	0	11	0	0	0	5	0	0	34
4:15 PM	0	0	6	0	0	0	0	0	0	7	1	0	0	3	0	0	17
4:30 PM	0	0	2	0	0	0	0	0	0	6	0	0	1	9	0	0	18
4:45 PM	0	0	1	0	0	0	0	0	0	6	0	0	0	4	0	0	11
5:00 PM	0	0	2	0	0	0	0	0	0	4	0	0	1	2	0	0	9
5:15 PM	0	0	3	0	0	0	0	0	0	8	0	0	0	7	0	0	18
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	8	0	0	10
5:45 PM	0	0	1	0	0	0	0	0	0	2	0	0	0	1	0	0	4
6:00 PM	0	0	0	0	0	0	0	0	0	11	0	0	3	8	0	0	22
6:15 PM	0	0	1	0	0	0	0	0	0	13	0	0	0	2	0	0	16
6:30 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	3	0	0	10
6:45 PM	0	0	1	0	0	0	0	0	0	11	0	0	0	4	0	0	16
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	35	0	0	0	0	0	0	88	1	0	5	56	0	0	185
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	98.88%	1.12%	0.00%	8.20%	91.80%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	27	0	0	0	0	0	0	30	1	0	1	21	0	0	80
PEAK HR FACTOR :	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.682	0.250	0.000	0.250	0.583	0.000	0.000	0.588
	0.375								0.705				0.550				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Power Line Rd & W Elverta Rd
City: Sacramento
Control: 4-Way Stop

Project ID: 20-07093-003
Date: 3/12/2020

Total

NS/EW Streets:	Power Line Rd				Power Line Rd				W Elverta Rd				W Elverta Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	1	0	0	0	3	0	0	6	16	0	0	26
6:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	7	15	0	0	24
6:30 AM	0	1	0	0	0	0	0	0	0	4	0	0	14	10	0	0	29
6:45 AM	1	0	1	0	1	0	0	0	0	0	0	0	11	8	0	0	22
7:00 AM	1	0	0	0	0	1	0	0	0	6	0	0	9	5	1	0	23
7:15 AM	0	0	0	0	0	0	0	0	0	1	1	0	13	5	0	0	20
7:30 AM	1	1	1	0	0	1	0	0	0	4	0	0	11	5	0	0	24
7:45 AM	1	0	1	0	0	1	0	0	0	4	1	0	8	3	0	0	19
8:00 AM	0	2	3	0	0	0	0	0	0	1	1	0	5	10	0	0	22
8:15 AM	0	0	2	0	0	0	0	0	0	2	0	0	4	6	0	0	14
8:30 AM	1	1	2	0	0	1	0	0	0	1	2	0	3	10	2	0	23
8:45 AM	0	0	1	0	3	1	0	0	0	2	0	0	4	4	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	5	11	0	4	8	0	0	0	28	5	0	95	97	3	0	261
APPROACH %'s :	23.81%	23.81%	52.38%	0.00%	33.33%	66.67%	0.00%	0.00%	0.00%	84.85%	15.15%	0.00%	48.72%	49.74%	1.54%	0.00%	
PEAK HR :	06:00 AM - 07:00 AM																TOTAL
PEAK HR VOL :	1	1	1	0	1	3	0	0	0	7	0	0	38	49	0	0	101
PEAK HR FACTOR :	0.250	0.250	0.250	0.000	0.250	0.375	0.000	0.000	0.000	0.438	0.000	0.000	0.679	0.766	0.000	0.000	0.871
	0.375				0.500				0.438				0.906				

	Power Line Rd				Power Line Rd				W Elverta Rd				W Elverta Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	10	0	0	1	0	0	0	28	4	0	1	4	0	0	49
4:15 PM	0	3	15	0	0	0	0	0	0	11	2	0	0	3	0	0	34
4:30 PM	3	4	19	0	0	1	0	0	0	8	0	0	3	8	0	0	46
4:45 PM	1	4	17	0	0	1	0	0	0	7	0	0	1	3	0	0	34
5:00 PM	1	2	16	0	0	1	0	0	3	8	0	0	3	2	0	0	36
5:15 PM	2	3	20	0	2	1	0	0	0	7	0	0	2	6	0	0	43
5:30 PM	1	4	24	0	0	1	0	0	0	5	0	0	1	6	0	0	42
5:45 PM	0	2	16	0	0	0	1	0	0	3	1	0	0	2	0	0	25
6:00 PM	2	1	11	0	0	1	0	0	0	8	2	0	1	9	0	0	35
6:15 PM	0	1	2	0	0	2	0	0	0	15	0	0	3	1	1	0	25
6:30 PM	0	0	1	0	0	1	0	0	0	7	1	0	3	2	0	0	15
6:45 PM	1	0	2	0	0	0	0	0	2	6	0	0	0	3	0	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	12	24	153	0	2	10	1	0	5	113	10	0	18	49	1	0	398
APPROACH %'s :	6.35%	12.70%	80.95%	0.00%	15.38%	76.92%	7.69%	0.00%	3.91%	88.28%	7.81%	0.00%	26.47%	72.06%	1.47%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	5	11	61	0	0	3	0	0	0	54	6	0	5	18	0	0	163
PEAK HR FACTOR :	0.417	0.688	0.803	0.000	0.000	0.750	0.000	0.000	0.000	0.482	0.375	0.000	0.417	0.563	0.000	0.000	0.832
	0.740				0.750				0.469				0.523				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Metro Air Pkwy & W Elverta Rd
City: Sacramento
Control: 1-Way Stop(NB)

Project ID: 20-07093-004
Date: 3/12/2020

Total

NS/EW Streets: Metro Air Pkwy (Northbound) | Metro Air Pkwy (Southbound) | W Elverta Rd (Eastbound) | W Elverta Rd (Westbound)

AM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	1	0	0	0	0	0	0	5	0	0	3	22	0	0	31
6:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	7	22	0	0	30
6:30 AM	0	0	2	0	0	0	0	0	0	4	0	0	26	25	0	0	57
6:45 AM	1	0	1	0	0	0	0	0	0	1	0	0	15	20	0	1	39
7:00 AM	0	0	0	0	0	0	0	0	0	6	0	0	30	14	0	1	51
7:15 AM	0	0	4	0	0	0	0	0	0	1	0	0	26	17	0	0	48
7:30 AM	0	0	0	0	0	0	0	0	0	3	1	0	17	15	0	0	36
7:45 AM	0	0	1	0	0	0	0	0	0	4	0	0	12	12	0	0	29
8:00 AM	0	0	3	0	0	0	0	0	0	1	0	0	7	12	0	0	23
8:15 AM	0	0	2	0	0	0	0	0	0	6	1	0	3	9	0	0	21
8:30 AM	1	0	0	1	0	0	0	0	0	2	0	0	0	14	0	0	18
8:45 AM	0	0	0	0	0	0	0	0	0	3	2	0	3	8	0	0	16
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	0	15	1	0	0	0	0	0	36	4	0	149	190	0	2	399
APPROACH %'s :	11.11%	0.00%	83.33%	5.56%					0.00%	90.00%	10.00%	0.00%	43.70%	55.72%	0.00%	0.59%	
PEAK HR :	06:30 AM - 07:30 AM																TOTAL
PEAK HR VOL :	1	0	7	0	0	0	0	0	0	12	0	0	97	76	0	2	195
PEAK HR FACTOR :	0.250	0.000	0.438	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.808	0.760	0.000	0.500	0.855
	0.500								0.500				0.858				

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	11	0	0	0	0	0	0	41	0	0	0	4	0	0	56
4:15 PM	0	0	11	0	0	0	0	0	0	25	1	0	1	3	0	0	41
4:30 PM	0	0	22	0	0	0	0	0	0	27	0	0	0	11	0	0	60
4:45 PM	0	0	14	1	0	0	0	0	0	22	1	0	3	4	0	0	45
5:00 PM	0	0	20	0	0	0	0	0	0	26	0	0	1	5	0	0	52
5:15 PM	0	0	9	0	0	0	0	0	0	27	0	0	4	9	0	0	49
5:30 PM	0	0	15	0	0	0	0	0	0	30	0	0	5	5	0	0	55
5:45 PM	0	0	13	0	0	0	0	0	0	19	0	0	7	2	0	0	41
6:00 PM	1	0	27	1	0	0	0	0	0	19	0	0	5	8	0	0	61
6:15 PM	1	0	12	0	0	0	0	0	0	17	0	0	3	4	0	0	37
6:30 PM	1	0	7	0	0	0	0	0	0	8	0	0	1	4	0	0	21
6:45 PM	0	0	2	0	0	0	0	0	0	8	0	0	2	3	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	0	163	2	0	0	0	0	0	269	2	0	32	62	0	0	533
APPROACH %'s :	1.79%	0.00%	97.02%	1.19%					0.00%	99.26%	0.74%	0.00%	34.04%	65.96%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	65	1	0	0	0	0	0	102	1	0	8	29	0	0	206
PEAK HR FACTOR :	0.000	0.000	0.739	0.250	0.000	0.000	0.000	0.000	0.000	0.944	0.250	0.000	0.500	0.659	0.000	0.000	0.858
	0.750								0.954				0.712				

National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-99 SB Ramps & W Elverta Rd
City: Sacramento
Control: Signalized

Project ID: 20-07093-005
Date: 3/12/2020

Total

NS/EW Streets:	SR-99 SB Ramps				SR-99 SB Ramps				W Elverta Rd				W Elverta Rd				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	0	0	0	0	1	0	2	0	0	2	1	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	14	0	10	0	0	2	4	0	1	14	50	0	95
6:15 AM	0	0	0	0	17	0	10	0	0	0	0	0	4	23	54	0	108
6:30 AM	0	0	0	0	16	0	26	0	0	2	3	0	6	28	85	0	166
6:45 AM	0	0	0	0	11	0	11	0	0	3	1	0	3	20	62	0	111
7:00 AM	0	0	0	0	17	0	30	0	0	4	4	0	3	19	66	0	143
7:15 AM	0	0	0	0	21	0	20	0	0	2	2	0	0	23	80	0	148
7:30 AM	0	0	0	0	21	0	14	0	0	2	2	0	0	16	56	0	111
7:45 AM	0	0	0	0	10	0	12	0	0	3	2	0	2	19	49	0	97
8:00 AM	0	0	0	0	14	0	5	0	0	3	3	0	0	8	49	0	82
8:15 AM	0	0	0	0	16	0	2	0	0	3	2	0	1	11	61	0	96
8:30 AM	0	0	0	0	10	0	3	0	0	1	1	0	0	11	47	0	73
8:45 AM	0	0	0	0	3	0	4	0	0	0	3	0	2	7	33	0	52
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	170	0	147	0	0	25	27	0	22	199	692	0	1282
APPROACH %'s :					53.63%	0.00%	46.37%	0.00%	0.00%	48.08%	51.92%	0.00%	2.41%	21.80%	75.79%	0.00%	
PEAK HR :	06:30 AM - 07:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	65	0	87	0	0	11	10	0	12	90	293	0	568
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.774	0.000	0.725	0.000	0.000	0.688	0.625	0.000	0.500	0.804	0.862	0.000	0.855
					0.809				0.656				0.830				

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	0	0	0	0	1	0	2	0	0	2	1	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	19	0	0	0	0	32	20	0	0	1	16	0	88
4:15 PM	0	0	0	0	17	0	0	0	0	27	10	0	2	5	21	0	82
4:30 PM	0	0	0	0	17	0	4	0	0	43	4	0	0	10	21	0	99
4:45 PM	0	0	0	0	12	0	3	0	0	30	9	0	0	2	12	0	68
5:00 PM	0	0	0	0	15	0	2	0	0	42	3	0	1	5	25	0	93
5:15 PM	0	0	0	0	15	0	2	0	0	31	6	0	1	12	20	0	87
5:30 PM	0	0	0	0	11	0	2	0	0	41	2	0	0	8	17	0	81
5:45 PM	0	0	0	0	7	0	3	0	0	30	3	0	0	6	21	0	70
6:00 PM	0	0	0	0	10	0	7	0	0	33	13	0	0	6	17	0	86
6:15 PM	0	0	0	0	6	0	3	0	0	16	11	0	1	5	23	0	65
6:30 PM	0	0	0	0	9	0	0	0	0	12	5	0	1	3	10	0	40
6:45 PM	0	0	0	0	8	0	1	0	0	7	3	0	0	5	21	0	45
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	146	0	27	0	0	344	89	0	6	68	224	0	904
APPROACH %'s :					84.39%	0.00%	15.61%	0.00%	0.00%	79.45%	20.55%	0.00%	2.01%	22.82%	75.17%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	59	0	11	0	0	146	22	0	2	29	78	0	347
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.868	0.000	0.688	0.000	0.000	0.849	0.611	0.000	0.500	0.604	0.780	0.000	0.876
					0.833				0.894				0.826				

National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-99 NB Ramps & W Elverta Rd
City: Sacramento
Control: Signalized

Project ID: 20-07093-006
Date: 3/12/2020

Total

NS/EW Streets:	SR-99 NB Ramps				SR-99 NB Ramps				W Elverta Rd				W Elverta Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	2	0	0	0	0	0	0	2	1	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	14	0	11	0	0	0	0	0	0	13	3	0	0	52	9	0	102
6:15 AM	18	0	14	0	0	0	0	0	0	17	0	0	0	62	18	0	129
6:30 AM	22	0	18	0	0	0	0	0	0	16	3	0	0	105	14	0	178
6:45 AM	11	0	17	0	0	0	0	0	0	11	3	0	0	74	8	0	124
7:00 AM	6	0	12	0	0	0	0	0	0	17	2	0	0	79	8	0	124
7:15 AM	5	0	14	0	0	0	0	0	0	19	1	0	0	101	17	0	157
7:30 AM	4	0	24	0	0	0	0	0	0	24	0	0	0	66	6	0	124
7:45 AM	2	0	31	0	0	0	0	0	0	14	2	0	0	70	18	0	137
8:00 AM	6	0	22	0	0	0	0	0	0	12	3	0	0	55	13	0	111
8:15 AM	6	0	8	0	0	0	0	0	0	20	1	0	0	63	8	0	106
8:30 AM	10	0	11	0	0	0	0	0	0	9	2	0	0	43	9	0	84
8:45 AM	3	0	17	0	0	0	0	0	0	3	0	0	0	42	8	0	73
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	107	0	199	0	0	0	0	0	0	175	20	0	0	812	136	0	1449
APPROACH %'s :	34.97%	0.00%	65.03%	0.00%					0.00%	89.74%	10.26%	0.00%	0.00%	85.65%	14.35%	0.00%	
PEAK HR :	06:30 AM - 07:30 AM																TOTAL
PEAK HR VOL :	44	0	61	0	0	0	0	0	0	63	9	0	0	359	47	0	583
PEAK HR FACTOR :	0.500	0.000	0.847	0.000	0.000	0.000	0.000	0.000	0.000	0.829	0.750	0.000	0.000	0.855	0.691	0.000	0.819
	0.656								0.900				0.853				

NS/EW Streets:	SR-99 NB Ramps				SR-99 NB Ramps				W Elverta Rd				W Elverta Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	2	0	0	0	0	0	0	2	1	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	116	0	0	0	0	0	0	37	11	0	0	17	13	0	194
4:15 PM	6	0	151	0	0	0	0	0	0	37	10	0	0	21	13	0	238
4:30 PM	4	0	131	0	0	0	0	0	0	46	12	0	0	26	18	0	237
4:45 PM	4	0	145	0	0	0	0	0	0	30	15	0	0	14	7	0	215
5:00 PM	2	0	146	0	0	0	0	0	0	39	16	0	0	27	13	0	243
5:15 PM	4	1	125	0	0	0	0	0	0	31	19	0	0	28	15	0	223
5:30 PM	4	1	109	0	0	0	0	0	0	34	20	0	0	20	11	0	199
5:45 PM	3	0	71	0	0	0	0	0	0	21	15	0	0	24	9	0	143
6:00 PM	4	0	78	0	0	0	0	0	0	19	18	0	0	19	13	0	151
6:15 PM	1	0	46	0	0	0	0	0	0	15	11	0	0	29	8	0	110
6:30 PM	1	2	41	0	0	0	0	0	0	14	6	0	0	16	13	0	93
6:45 PM	3	0	29	0	0	0	0	0	0	12	4	0	0	22	5	0	75
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	36	4	1188	0	0	0	0	0	0	335	157	0	0	263	138	0	2121
APPROACH %'s :	2.93%	0.33%	96.74%	0.00%					0.00%	68.09%	31.91%	0.00%	0.00%	65.59%	34.41%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	16	0	573	0	0	0	0	0	0	152	53	0	0	88	51	0	933
PEAK HR FACTOR :	0.667	0.000	0.949	0.000	0.000	0.000	0.000	0.000	0.000	0.826	0.828	0.000	0.000	0.815	0.708	0.000	0.960
	0.938								0.884				0.790				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Power Line Rd & W Elkhorn Blvd
City: Sacramento
Control: 3-Way Stop(NB/SB/WB)

Project ID: 20-07093-007
Date: 3/12/2020

Total

NS/EW Streets:	Power Line Rd				Power Line Rd				W Elkhorn Blvd				W Elkhorn Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	1	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	2	0	0	8	0	0	0	0	0	0	4	0	0	0	14
6:15 AM	0	0	6	0	0	6	0	0	0	0	0	0	5	0	1	0	18
6:30 AM	0	3	9	0	0	8	0	0	0	0	0	0	13	0	1	1	35
6:45 AM	0	6	23	0	0	5	0	0	0	0	0	0	11	0	1	0	46
7:00 AM	0	1	23	0	1	6	0	0	0	0	0	0	19	0	1	0	51
7:15 AM	0	3	24	0	0	15	0	0	0	0	0	0	20	0	0	0	62
7:30 AM	0	5	14	0	1	9	0	0	0	0	0	0	38	0	0	0	67
7:45 AM	0	6	3	0	0	10	0	0	0	0	0	0	44	0	0	0	63
8:00 AM	0	5	8	0	0	9	0	0	0	0	0	0	24	0	1	0	47
8:15 AM	0	1	7	0	0	29	0	0	0	0	0	0	14	0	1	0	52
8:30 AM	0	2	4	0	1	4	0	0	0	0	0	0	15	0	1	0	27
8:45 AM	0	0	5	0	0	3	0	0	0	0	0	0	7	0	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	32	128	0	3	112	0	0	0	0	0	0	214	0	7	1	497
APPROACH %'s :	0.00%	20.00%	80.00%	0.00%	2.61%	97.39%	0.00%	0.00%					96.40%	0.00%	3.15%	0.45%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	15	64	0	2	40	0	0	0	0	0	0	121	0	1	0	243
PEAK HR FACTOR :	0.000	0.625	0.667	0.000	0.500	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.688	0.000	0.250	0.000	0.907
	0.731				0.700								0.693				

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	0	1	1	0	0	1	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	14	60	0	0	3	0	0	0	0	0	0	12	0	0	0	89
4:15 PM	0	22	64	0	0	4	0	0	0	0	0	0	3	0	0	0	93
4:30 PM	0	26	68	0	2	5	0	0	0	0	0	0	7	0	0	0	108
4:45 PM	0	22	60	0	0	2	0	0	0	0	0	0	6	0	3	0	93
5:00 PM	0	25	64	1	1	5	0	0	0	0	0	0	10	0	2	0	108
5:15 PM	0	30	70	0	1	3	0	0	0	0	0	0	6	0	1	1	112
5:30 PM	0	34	72	0	2	1	0	0	0	0	0	0	12	0	0	0	121
5:45 PM	0	18	77	0	0	1	0	0	0	0	0	0	8	0	0	0	104
6:00 PM	0	11	39	0	0	3	0	0	0	0	0	0	46	0	0	0	99
6:15 PM	0	3	21	0	1	7	0	0	0	0	0	0	25	0	0	0	57
6:30 PM	0	3	10	0	0	5	0	0	0	0	0	0	10	0	0	0	28
6:45 PM	0	6	4	0	0	1	0	0	0	0	0	0	7	0	0	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	214	609	1	7	40	0	0	0	0	0	0	152	0	6	1	1030
APPROACH %'s :	0.00%	25.97%	73.91%	0.12%	14.89%	85.11%	0.00%	0.00%					95.60%	0.00%	3.77%	0.63%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	107	283	1	4	10	0	0	0	0	0	0	36	0	3	1	445
PEAK HR FACTOR :	0.000	0.787	0.919	0.250	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.375	0.250	0.919
	0.922				0.583								0.833				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Metro Air Pkwy & W Elkhorn Blvd
City: Sacramento
Control: 4-Way Stop

Project ID: 20-07093-008
Date: 3/12/2020

Total

NS/EW Streets:	Metro Air Pkwy				Metro Air Pkwy				W Elkhorn Blvd				W Elkhorn Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	3	0	2	1	0	9	0	0	2	24	4	0	45
6:15 AM	1	0	0	0	3	0	1	0	0	7	1	0	2	51	15	0	81
6:30 AM	2	0	0	0	2	0	4	0	0	17	0	0	4	95	26	0	150
6:45 AM	1	0	2	0	3	0	2	0	0	30	0	0	1	128	13	0	180
7:00 AM	1	0	0	0	4	0	7	0	0	25	0	0	1	117	14	0	169
7:15 AM	0	0	0	0	3	0	10	0	1	25	0	0	0	164	25	0	228
7:30 AM	1	1	0	0	11	0	11	0	0	20	0	0	1	70	11	0	126
7:45 AM	1	0	0	0	13	0	12	0	0	13	0	0	2	45	9	0	95
8:00 AM	1	0	0	0	6	0	5	1	1	12	0	0	0	29	11	0	66
8:15 AM	1	0	0	0	5	0	2	0	0	13	0	0	1	21	14	0	57
8:30 AM	0	0	0	0	2	0	1	0	0	3	2	0	2	23	16	0	49
8:45 AM	0	0	0	0	10	0	1	0	0	7	0	1	0	17	13	0	49
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	1	2	0	65	0	58	2	2	181	3	1	16	784	171	0	1295
APPROACH %'s :	75.00%	8.33%	16.67%	0.00%	52.00%	0.00%	46.40%	1.60%	1.07%	96.79%	1.60%	0.53%	1.65%	80.74%	17.61%	0.00%	
PEAK HR :	06:30 AM - 07:30 AM																TOTAL
PEAK HR VOL :	4	0	2	0	12	0	23	0	1	97	0	0	6	504	78	0	727
PEAK HR FACTOR :	0.500	0.000	0.250	0.000	0.750	0.000	0.575	0.000	0.250	0.808	0.000	0.000	0.375	0.768	0.750	0.000	0.797
	0.500				0.673				0.817				0.778				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	3	0	5	0	0	0	12	61	0	0	0	13	4	1	100
4:15 PM	1	0	1	0	7	0	0	0	6	76	2	0	0	11	2	0	106
4:30 PM	0	1	1	0	5	0	0	0	16	56	3	0	0	17	5	1	105
4:45 PM	0	0	1	0	3	0	1	0	14	64	0	0	0	23	11	0	117
5:00 PM	1	0	0	0	13	0	0	0	13	70	1	0	0	37	4	0	139
5:15 PM	0	0	2	0	10	0	0	0	8	68	0	0	0	61	4	0	153
5:30 PM	0	0	0	0	9	0	0	0	9	128	0	0	1	89	5	1	242
5:45 PM	1	0	0	0	10	0	2	0	5	75	0	0	1	104	4	0	202
6:00 PM	2	1	0	0	40	0	1	0	5	153	2	0	0	97	7	0	308
6:15 PM	1	0	0	0	14	0	0	0	2	126	0	0	1	100	6	0	250
6:30 PM	0	0	0	0	9	0	2	0	3	64	1	0	1	31	6	0	117
6:45 PM	0	1	0	0	8	0	1	0	0	19	0	0	2	8	7	0	46
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	3	8	0	133	0	7	0	93	960	9	0	6	591	65	3	1885
APPROACH %'s :	38.89%	16.67%	44.44%	0.00%	95.00%	0.00%	5.00%	0.00%	8.76%	90.40%	0.85%	0.00%	0.90%	88.87%	9.77%	0.45%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	4	1	0	0	73	0	3	0	21	482	2	0	3	390	22	1	1002
PEAK HR FACTOR :	0.500	0.250	0.000	0.000	0.456	0.000	0.375	0.000	0.583	0.788	0.250	0.000	0.750	0.938	0.786	0.250	0.813
	0.417				0.463				0.789				0.954				

National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-99 SB Ramps & W Elkhorn Blvd
City: Sacramento
Control: 1-Way Stop(SB)

Project ID: 20-07093-009
Date: 3/12/2020

Total

NS/EW Streets:	SR-99 SB Ramps				SR-99 SB Ramps				W Elkhorn Blvd				W Elkhorn Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	23	0	1	0	0	2	9	0	0	31	150	0	216
6:15 AM	0	0	0	0	23	0	7	0	0	3	10	0	0	65	164	0	272
6:30 AM	0	0	0	0	18	0	8	0	0	5	12	0	0	113	196	0	352
6:45 AM	0	0	0	0	26	0	8	0	0	12	22	0	0	150	188	0	406
7:00 AM	0	0	0	0	27	0	7	0	0	7	29	0	0	132	166	0	368
7:15 AM	0	0	0	0	24	0	7	0	0	11	19	0	0	159	168	0	388
7:30 AM	0	0	0	0	28	0	3	0	0	13	16	0	0	75	240	0	375
7:45 AM	0	0	0	0	23	0	5	0	0	9	26	0	0	50	233	0	346
8:00 AM	0	0	0	0	23	0	3	0	0	7	8	0	0	43	219	0	303
8:15 AM	0	0	0	0	19	0	3	0	0	5	13	0	0	39	223	0	302
8:30 AM	0	0	0	0	22	0	4	0	0	4	4	0	0	32	233	0	299
8:45 AM	0	0	0	0	12	0	1	0	0	2	12	0	0	41	163	0	231
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	268	0	57	0	0	80	180	0	0	930	2343	0	3858
APPROACH %'s :					82.46%	0.00%	17.54%	0.00%	0.00%	30.77%	69.23%	0.00%	0.00%	28.41%	71.59%	0.00%	
PEAK HR :	06:45 AM - 07:45 AM																TOTAL
PEAK HR VOL :	0	0	0	0	105	0	25	0	0	43	86	0	0	516	762	0	1537
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.938	0.000	0.781	0.000	0.000	0.827	0.741	0.000	0.000	0.811	0.794	0.000	0.946
					0.956				0.896				0.945				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	28	0	2	0	0	50	18	0	0	21	103	0	222
4:15 PM	0	0	0	0	21	0	0	0	0	60	19	0	0	10	99	0	209
4:30 PM	0	0	0	0	27	0	2	0	0	52	18	0	0	29	99	0	227
4:45 PM	0	0	0	0	37	0	3	0	0	56	18	0	0	35	81	0	230
5:00 PM	0	0	0	0	34	0	7	0	0	50	29	0	0	31	81	0	232
5:15 PM	0	0	0	0	18	0	5	0	0	71	14	0	0	67	76	0	251
5:30 PM	0	0	0	0	35	0	9	0	0	75	58	0	0	84	94	0	355
5:45 PM	0	0	0	0	30	0	6	0	0	49	44	0	0	110	80	0	319
6:00 PM	0	0	0	0	20	0	4	0	0	82	108	0	0	112	79	0	405
6:15 PM	0	0	0	0	16	0	2	0	0	41	97	0	0	85	94	0	335
6:30 PM	0	0	0	0	32	0	0	0	0	21	57	0	0	30	91	0	231
6:45 PM	0	0	0	0	21	0	2	0	0	17	15	0	0	18	74	0	147
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	319	0	42	0	0	624	495	0	0	632	1051	0	3163
APPROACH %'s :					88.37%	0.00%	11.63%	0.00%	0.00%	55.76%	44.24%	0.00%	0.00%	37.55%	62.45%	0.00%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	101	0	21	0	0	247	307	0	0	391	347	0	1414
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.721	0.000	0.583	0.000	0.000	0.753	0.711	0.000	0.000	0.873	0.923	0.000	0.873
					0.693				0.729				0.966				

National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-99 NB Ramps & W Elkhorn Blvd
City: Sacramento
Control: Signalized

Project ID: 20-07093-010
Date: 3/12/2020

Total

NS/EW Streets: SR-99 NB Ramps (Northbound) | SR-99 NB Ramps (Southbound) | W Elkhorn Blvd (Eastbound) | W Elkhorn Blvd (Westbound)

AM

AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0	1	0	0	0	0	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	28	0	23	0	0	0	0	0	0	22	1	0	0	151	20	0	245
6:15 AM	47	0	37	0	0	0	0	0	0	26	0	0	0	177	27	0	314
6:30 AM	100	0	41	0	0	0	0	0	0	27	4	0	0	212	28	0	412
6:45 AM	107	0	58	0	0	0	0	0	0	38	3	0	0	224	29	0	459
7:00 AM	92	0	61	0	0	0	0	0	0	30	1	0	0	214	30	0	428
7:15 AM	130	0	92	0	0	0	0	0	0	33	1	0	0	194	19	0	469
7:30 AM	48	0	113	0	0	0	0	0	0	42	1	0	0	270	33	0	507
7:45 AM	28	0	152	0	0	0	0	0	0	25	1	0	0	265	28	0	499
8:00 AM	16	0	157	0	0	0	0	0	0	35	0	0	0	236	24	0	468
8:15 AM	24	0	120	0	0	0	0	0	0	20	0	0	0	247	29	0	440
8:30 AM	22	0	80	0	0	0	0	0	0	21	0	0	0	249	18	0	390
8:45 AM	24	0	107	0	0	0	0	0	0	21	1	0	0	173	21	0	347
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	666	0	1041	0	0	0	0	0	0	340	13	0	0	2612	306	0	4978
APPROACH %'s :	39.02%	0.00%	60.98%	0.00%					0.00%	96.32%	3.68%	0.00%	0.00%	89.51%	10.49%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	222	0	514	0	0	0	0	0	0	135	3	0	0	965	104	0	1943
PEAK HR FACTOR :	0.427	0.000	0.818	0.000	0.000	0.000	0.000	0.000	0.000	0.804	0.750	0.000	0.000	0.894	0.788	0.000	0.958
	0.829								0.802				0.882				

PM

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0	1	0	0	0	0	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	14	0	260	0	0	0	0	0	0	76	7	0	0	112	38	0	507
4:15 PM	6	0	201	0	0	0	0	0	0	70	11	0	0	91	45	0	424
4:30 PM	20	0	231	0	0	0	0	0	0	69	10	0	0	113	46	0	489
4:45 PM	31	0	233	0	0	0	0	0	0	82	9	0	0	88	44	0	487
5:00 PM	26	0	247	0	0	0	0	0	0	77	8	0	0	84	31	0	473
5:15 PM	41	0	195	0	0	0	0	0	0	72	14	0	0	99	35	0	456
5:30 PM	53	0	212	0	0	0	0	0	0	94	16	0	0	120	41	0	536
5:45 PM	79	0	228	0	0	0	0	0	0	74	9	0	0	116	19	0	525
6:00 PM	78	0	229	0	0	0	0	0	0	86	9	0	0	114	39	0	555
6:15 PM	68	0	182	0	0	0	0	0	0	57	6	0	0	113	27	0	453
6:30 PM	27	0	166	0	0	0	0	0	0	42	3	0	0	97	23	0	358
6:45 PM	14	0	154	0	0	0	0	0	0	41	1	0	0	78	24	0	312
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	457	0	2538	0	0	0	0	0	0	840	103	0	0	1225	412	0	5575
APPROACH %'s :	15.26%	0.00%	84.74%	0.00%					0.00%	89.08%	10.92%	0.00%	0.00%	74.83%	25.17%	0.00%	
PEAK HR :	05:15 PM - 06:15 PM																TOTAL
PEAK HR VOL :	251	0	864	0	0	0	0	0	0	326	48	0	0	449	134	0	2072
PEAK HR FACTOR :	0.794	0.000	0.943	0.000	0.000	0.000	0.000	0.000	0.000	0.867	0.750	0.000	0.000	0.935	0.817	0.000	0.933
	0.908								0.850				0.905				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Airport Blvd & I-5 NB Ramps
City: Sacramento
Control: 1-Way Stop (WB)

Project ID: 20-07093-011
Date: 3/12/2020

Total

NS/EW Streets:	Airport Blvd				Airport Blvd				I-5 NB Ramps				I-5 NB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	2	1	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	30	6	0	0	55	14	1	0	0	0	0	1	0	170	0	277
6:15 AM	0	32	4	0	0	64	13	0	0	0	0	0	3	0	161	0	277
6:30 AM	0	48	8	1	0	99	11	0	0	0	0	0	3	0	216	0	386
6:45 AM	0	47	2	0	0	118	19	1	0	0	0	0	1	0	182	0	370
7:00 AM	0	38	12	0	0	116	13	0	0	0	0	0	1	0	173	0	353
7:15 AM	0	47	23	1	0	104	23	0	0	0	0	0	1	0	197	0	396
7:30 AM	0	45	22	0	0	94	20	1	0	0	0	0	2	0	207	0	391
7:45 AM	0	48	34	0	0	117	21	1	0	0	0	0	0	0	210	0	431
8:00 AM	0	53	19	0	0	139	36	3	0	0	0	0	5	0	197	0	452
8:15 AM	0	47	11	0	0	180	41	1	0	0	0	0	2	0	228	0	510
8:30 AM	0	57	12	0	0	169	23	3	0	0	0	0	2	0	233	0	499
8:45 AM	0	52	9	0	0	198	46	2	0	0	0	0	1	0	229	0	537
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	544	162	2	0	1453	280	13	0	0	0	0	22	0	2403	0	4879
APPROACH %'s :	0.00%	76.84%	22.88%	0.28%	0.00%	83.22%	16.04%	0.74%					0.91%	0.00%	99.09%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	209	51	0	0	686	146	9	0	0	0	0	10	0	887	0	1998
PEAK HR FACTOR :	0.000	0.917	0.671	0.000	0.000	0.866	0.793	0.750	0.000	0.000	0.000	0.000	0.500	0.000	0.952	0.000	0.930
	0.903				0.855								0.954				

	Airport Blvd				Airport Blvd				I-5 NB Ramps				I-5 NB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	2	1	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	48	9	2	0	289	36	2	0	0	0	0	3	0	168	0	557
4:15 PM	0	53	7	1	0	307	50	2	0	0	0	0	2	0	196	0	618
4:30 PM	0	63	10	1	0	288	56	0	0	0	0	0	3	0	190	0	611
4:45 PM	0	43	11	0	0	240	57	1	0	0	0	0	0	0	191	0	543
5:00 PM	0	49	11	0	0	279	54	1	0	0	0	0	3	0	186	0	583
5:15 PM	0	55	14	2	0	326	51	0	0	0	0	0	1	0	151	0	600
5:30 PM	0	48	7	1	0	220	44	2	0	0	0	0	1	0	145	0	468
5:45 PM	0	40	8	0	0	166	39	3	0	0	0	0	4	0	182	0	442
6:00 PM	0	47	10	0	0	130	21	1	0	0	0	0	6	0	170	0	385
6:15 PM	0	56	6	2	0	160	31	0	0	0	0	0	2	0	194	0	451
6:30 PM	0	42	7	0	0	212	27	2	0	0	0	0	2	0	179	0	471
6:45 PM	0	34	5	0	0	224	36	0	0	0	0	0	5	0	171	0	475
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	578	105	9	0	2841	502	14	0	0	0	0	32	0	2123	0	6204
APPROACH %'s :	0.00%	83.53%	15.17%	1.30%	0.00%	84.63%	14.95%	0.42%					1.48%	0.00%	98.52%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	208	39	2	0	1114	217	4	0	0	0	0	8	0	763	0	2355
PEAK HR FACTOR :	0.000	0.825	0.886	0.500	0.000	0.907	0.952	0.500	0.000	0.000	0.000	0.000	0.667	0.000	0.973	0.000	0.953
	0.841				0.930								0.973				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Airport Blvd & I-5 SB Ramps
City: Sacramento
Control: 1-Way Stop(EB)

Project ID: 20-07093-012
Date: 3/12/2020

Total

NS/EW Streets:	Airport Blvd				Airport Blvd				I-5 SB Ramps				I-5 SB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	1	0	0	1	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	1	16	0	0	0	3	53	0	23	0	4	0	0	0	0	0	100
6:15 AM	1	13	0	0	0	0	67	0	24	0	7	0	0	0	0	0	112
6:30 AM	0	21	0	0	0	6	92	2	33	0	12	0	0	0	0	0	166
6:45 AM	3	11	0	0	0	10	112	0	38	0	19	0	0	0	0	0	193
7:00 AM	0	20	0	0	0	5	114	0	29	0	20	0	0	0	0	0	188
7:15 AM	1	41	0	0	0	7	93	0	33	0	24	0	0	0	0	0	199
7:30 AM	2	44	0	1	0	7	95	0	30	0	18	0	0	0	0	0	197
7:45 AM	0	49	0	0	0	7	103	0	26	0	13	0	0	0	1	0	199
8:00 AM	0	36	0	0	0	12	126	0	36	0	16	0	0	0	1	0	227
8:15 AM	0	25	0	0	0	12	181	0	30	0	10	0	0	0	1	0	259
8:30 AM	0	25	0	0	0	14	155	0	40	0	11	0	0	0	0	0	245
8:45 AM	0	18	0	0	0	11	187	0	42	0	4	0	0	0	3	0	265
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	8	319	0	1	0	94	1378	2	384	0	158	0	0	0	6	0	2350
APPROACH %'s :	2.44%	97.26%	0.00%	0.30%	0.00%	6.38%	93.49%	0.14%	70.85%	0.00%	29.15%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	104	0	0	0	49	649	0	148	0	41	0	0	0	5	0	996
PEAK HR FACTOR :	0.000	0.722	0.000	0.000	0.000	0.875	0.868	0.000	0.881	0.000	0.641	0.000	0.000	0.000	0.417	0.000	0.940
	0.722				0.881				0.909				0.417				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	1	0	0	1	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	20	0	0	0	51	230	1	38	0	76	0	0	0	1	0	418
4:15 PM	0	24	0	0	0	64	252	1	39	0	95	0	0	0	0	0	475
4:30 PM	0	29	0	0	0	67	219	3	40	0	81	0	0	0	0	0	439
4:45 PM	2	22	0	0	0	49	194	1	32	0	96	0	0	0	1	0	397
5:00 PM	1	23	0	0	0	50	219	0	39	0	88	0	0	0	1	0	421
5:15 PM	3	30	0	0	0	64	276	2	33	0	116	0	0	0	0	0	524
5:30 PM	0	19	0	1	0	43	181	0	39	0	86	0	0	0	1	0	370
5:45 PM	0	20	0	1	0	24	148	0	26	0	86	0	0	0	0	0	305
6:00 PM	3	33	0	0	0	16	121	1	30	0	27	0	0	0	1	0	232
6:15 PM	0	27	0	0	0	11	153	0	35	0	16	0	0	0	0	0	242
6:30 PM	1	18	0	0	0	15	197	1	29	0	17	0	0	0	3	0	281
6:45 PM	2	10	0	0	0	9	219	0	26	0	13	0	0	0	1	0	280
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	13	275	0	2	0	463	2409	10	406	0	797	0	0	0	9	0	4384
APPROACH %'s :	4.48%	94.83%	0.00%	0.69%	0.00%	16.07%	83.59%	0.35%	33.75%	0.00%	66.25%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	6	104	0	0	0	230	908	6	144	0	381	0	0	0	2	0	1781
PEAK HR FACTOR :	0.500	0.867	0.000	0.000	0.000	0.858	0.822	0.500	0.900	0.000	0.821	0.000	0.000	0.000	0.500	0.000	0.850
	0.833				0.836				0.881				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Power Line Rd & Skyking Rd
City: Sacramento
Control: 3-Way Stop(NB/SB/WB)

Project ID: 20-07093-013
Date: 3/12/2020

Total

NS/EW Streets:	Power Line Rd				Power Line Rd				Skyking Rd				Skyking Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	1	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	7	0	0	0	0	0	0	1	0	1	0	9
6:15 AM	0	1	1	0	1	7	0	0	0	0	0	0	2	0	7	0	19
6:30 AM	0	3	1	0	2	4	0	0	0	0	0	0	3	0	7	0	20
6:45 AM	0	5	2	0	0	5	0	0	0	0	0	0	0	0	0	0	12
7:00 AM	0	2	0	0	1	6	0	0	0	0	0	0	1	0	4	0	14
7:15 AM	0	1	1	0	1	14	0	0	0	0	0	0	1	0	0	0	18
7:30 AM	0	2	2	0	1	9	0	0	0	0	0	0	0	0	1	0	15
7:45 AM	0	4	2	0	2	9	0	0	0	0	0	0	2	0	0	0	19
8:00 AM	0	5	1	0	2	9	0	0	0	0	0	0	1	0	0	0	18
8:15 AM	0	1	1	0	2	4	0	0	0	0	0	0	24	0	4	0	36
8:30 AM	0	2	0	0	2	3	0	0	0	0	0	0	1	0	0	0	8
8:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	1	0	2	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	26	11	0	14	80	0	0	0	0	0	0	37	0	26	0	194
APPROACH %'s :	0.00%	70.27%	29.73%	0.00%	14.89%	85.11%	0.00%	0.00%					58.73%	0.00%	41.27%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	12	6	0	7	31	0	0	0	0	0	0	27	0	5	0	88
PEAK HR FACTOR :	0.000	0.600	0.750	0.000	0.875	0.861	0.000	0.000	0.000	0.000	0.000	0.000	0.281	0.000	0.313	0.000	0.611
	0.750				0.864								0.286				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	1	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	13	1	0	4	6	0	0	0	0	0	0	0	0	0	0	24
4:15 PM	0	13	8	0	0	1	0	0	0	0	0	0	2	0	2	0	26
4:30 PM	0	25	2	0	0	4	0	0	0	0	0	0	1	0	1	0	33
4:45 PM	0	19	7	0	2	2	0	0	0	0	0	0	0	0	1	0	31
5:00 PM	0	17	8	0	5	3	0	0	0	0	0	0	4	0	0	0	37
5:15 PM	0	26	6	0	1	2	0	0	0	0	0	0	1	0	0	0	36
5:30 PM	0	24	9	0	0	2	0	0	0	0	0	0	1	0	1	0	37
5:45 PM	0	15	4	0	0	1	0	0	0	0	0	0	0	0	3	0	23
6:00 PM	0	5	5	0	0	2	0	0	0	0	0	0	1	0	0	0	13
6:15 PM	0	3	0	0	5	5	0	0	0	0	0	0	3	0	0	0	16
6:30 PM	0	2	1	0	1	5	0	0	0	0	0	0	0	0	0	0	9
6:45 PM	0	3	3	0	0	0	0	0	0	0	0	0	1	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	165	54	0	18	33	0	0	0	0	0	0	14	0	8	0	292
APPROACH %'s :	0.00%	75.34%	24.66%	0.00%	35.29%	64.71%	0.00%	0.00%					63.64%	0.00%	36.36%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	86	30	0	8	9	0	0	0	0	0	0	6	0	2	0	141
PEAK HR FACTOR :	0.000	0.827	0.833	0.000	0.400	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.500	0.000	0.953
	0.879				0.531								0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Metro Air Pkwy & Skyking Rd
City: Sacramento
Control: 1-Way Stop(EB)

Project ID: 20-07093-014
Date: 3/12/2020

Total

NS/EW Streets:	Metro Air Pkwy				Metro Air Pkwy				Skyking Rd				Skyking Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	4	0	0	0	0	1	2	0	0	0	4	0	0	0	0	0	11
6:15 AM	13	1	0	0	0	2	4	0	0	0	3	0	0	0	0	0	23
6:30 AM	23	2	0	1	0	4	16	0	1	0	1	0	0	0	0	0	48
6:45 AM	10	1	0	0	0	3	13	0	1	0	3	0	0	0	0	0	31
7:00 AM	17	0	0	0	0	6	21	0	0	0	4	0	0	0	0	0	48
7:15 AM	22	3	0	1	0	10	20	0	3	0	2	0	0	0	0	0	61
7:30 AM	10	1	0	0	0	12	5	0	0	0	13	0	0	0	0	0	41
7:45 AM	11	0	0	0	0	10	1	0	0	0	12	0	0	0	0	0	34
8:00 AM	10	1	0	0	0	7	3	0	2	0	5	0	0	0	0	0	28
8:15 AM	11	2	0	0	0	1	3	0	0	0	5	0	0	0	0	0	22
8:30 AM	15	1	0	0	0	1	0	0	0	0	2	0	0	0	0	0	19
8:45 AM	13	2	0	0	0	3	2	0	0	0	10	0	0	0	0	0	30
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	159	14	0	2	0	60	90	0	7	0	64	0	0	0	0	0	396
APPROACH %'s :	90.86%	8.00%	0.00%	1.14%	0.00%	40.00%	60.00%	0.00%	9.86%	0.00%	90.14%	0.00%					
PEAK HR :	06:30 AM - 07:30 AM																TOTAL
PEAK HR VOL :	72	6	0	2	0	23	70	0	5	0	10	0	0	0	0	0	188
PEAK HR FACTOR :	0.783	0.500	0.000	0.500	0.000	0.575	0.833	0.000	0.417	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.770
	0.769				0.775				0.750								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	12	0	0	0	0	0	0	3	0	5	0	0	0	0	0	24
4:15 PM	2	6	0	0	0	1	1	0	3	0	6	0	0	0	0	0	19
4:30 PM	6	16	0	0	0	0	0	0	6	0	5	0	0	0	0	0	33
4:45 PM	11	14	0	0	0	2	3	0	4	0	4	0	0	0	0	0	38
5:00 PM	4	13	0	0	0	0	1	0	3	0	11	0	0	0	0	0	32
5:15 PM	3	7	0	0	0	0	2	0	3	0	10	0	0	0	0	0	25
5:30 PM	6	9	0	0	0	0	7	0	7	0	9	0	0	0	0	0	38
5:45 PM	4	5	0	0	0	2	4	0	8	0	11	0	0	1	0	0	35
6:00 PM	7	6	0	0	0	1	6	0	27	0	40	0	0	0	0	0	87
6:15 PM	5	2	0	1	0	0	3	0	8	0	13	0	0	0	0	0	32
6:30 PM	5	4	0	0	0	1	1	0	3	0	10	0	0	0	0	0	24
6:45 PM	7	1	0	0	0	1	1	0	1	0	8	0	0	0	0	0	19
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	64	95	0	1	0	8	29	0	76	0	132	0	0	1	0	0	406
APPROACH %'s :	40.00%	59.38%	0.00%	0.63%	0.00%	21.62%	78.38%	0.00%	36.54%	0.00%	63.46%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	22	22	0	1	0	3	20	0	50	0	73	0	0	1	0	0	192
PEAK HR FACTOR :	0.786	0.611	0.000	0.250	0.000	0.375	0.714	0.000	0.463	0.000	0.456	0.000	0.000	0.250	0.000	0.000	0.552
	0.750				0.821				0.459				0.250				

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Garden Hwy & Earhart Dr

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	281	277	558

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		0		1		12:00			4		5		9	
00:15			0		0		0		12:15			5		3		8	
00:30			0		0		0		12:30			3		4		7	
00:45			2	3	0		2	3	12:45			7	19	6	18	13	37
01:00			0		0		0		13:00			7		8		15	
01:15			1		0		1		13:15			14		8		22	
01:30			0		1		1		13:30			15		9		24	
01:45			2	3	0	1	2	4	13:45			6	42	2	27	8	69
02:00			0		0		0		14:00			9		8		17	
02:15			0		0		0		14:15			9		9		18	
02:30			1		0		1		14:30			3		5		8	
02:45			2	3	1	1	3	4	14:45			4	25	6	28	10	53
03:00			0		0		0		15:00			12		2		14	
03:15			0		0		0		15:15			7		5		12	
03:30			0		0		0		15:30			11		5		16	
03:45			0		0		0		15:45			5	35	3	15	8	50
04:00			0		1		1		16:00			7		5		12	
04:15			0		0		0		16:15			6		4		10	
04:30			0		2		2		16:30			5		4		9	
04:45			0		2	5	2	5	16:45			5	23	3	16	8	39
05:00			0		1		1		17:00			12		3		15	
05:15			2		0		2		17:15			3		4		7	
05:30			0		1		1		17:30			6		4		10	
05:45			0	2	3	5	3	7	17:45			4	25	3	14	7	39
06:00			0		0		0		18:00			8		3		11	
06:15			3		3		6		18:15			6		6		12	
06:30			0		10		10		18:30			8		3		11	
06:45			0	3	8	21	8	24	18:45			5	27	3	15	8	42
07:00			0		2		2		19:00			6		1		7	
07:15			1		3		4		19:15			1		2		3	
07:30			2		5		7		19:30			3		3		6	
07:45			1	4	3	13	4	17	19:45			3	13	3	9	6	22
08:00			0		8		8		20:00			3		2		5	
08:15			2		5		7		20:15			0		3		3	
08:30			0		2		2		20:30			1		2		3	
08:45			1	3	2	17	3	20	20:45			1	5	0	7	1	12
09:00			3		3		6		21:00			2		1		3	
09:15			1		2		3		21:15			1		2		3	
09:30			1		6		7		21:30			3		2		5	
09:45			1	6	3	14	4	20	21:45			0	6	0	5	0	11
10:00			5		2		7		22:00			3		2		5	
10:15			3		4		7		22:15			1		0		1	
10:30			5		7		12		22:30			0		1		1	
10:45			3	16	6	19	9	35	22:45			0	4	1	4	1	8
11:00			5		6		11		23:00			0		1		1	
11:15			1		2		3		23:15			0		0		0	
11:30			2		6		8		23:30			0		0		0	
11:45			3	11	8	22	11	33	23:45			3	3	0	1	3	4
TOTALS				54		118		**172**	**TOTALS**				227		159		**386**
SPLIT %				31.4%		68.6%		**30.8%**	**SPLIT %**				58.8%		41.2%		**69.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	281	277	558

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			10:00	06:15	**10:15**	**PM Peak Hour**			13:15	12:45	**12:45**
AM Pk Volume			16	23	**39**	**PM Pk Volume**			44	31	**74**
Pk Hr Factor			0.800	0.575	**0.813**	**Pk Hr Factor**			0.733	0.861	**0.771**
7 - 9 Volume	0	0	7	30	**37**	**4 - 6 Volume**	0	0	48	30	**78**
7 - 9 Peak Hour			07:30	07:30	**07:30**	**4 - 6 Peak Hour**			16:15	16:00	**16:15**
7 - 9 Pk Volume	0	0	5	21	**26**	**4 - 6 Pk Volume**	0	0	28	16	**42**
Pk Hr Factor	0.000	0.000	0.625	0.656	**0.813**	**Pk Hr Factor**	0.000	0.000	0.583	0.800	**0.700**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Garden Hwy & Earhart Dr

Day: Wednesday **City:** Sacramento
Date: 3/11/2020 **Project #:** CA20_7094_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	305	269	574

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			2		0		2		12:00			2		3		5	
00:15			1		0		1		12:15			3		3		6	
00:30			1		0		1		12:30			8		3		11	
00:45			1	5	0		1	5	12:45			7	20	4	13	11	33
01:00			0		0		0		13:00			8		5		13	
01:15			0		0		0		13:15			8		7		15	
01:30			0		0		0		13:30			4		3		7	
01:45			2	2	1	1	3	3	13:45			5	25	4	19	9	44
02:00			0		0		0		14:00			6		6		12	
02:15			0		1		1		14:15			11		5		16	
02:30			0		0		0		14:30			7		2		9	
02:45			1	1	0	1	1	2	14:45			7	31	5	18	12	49
03:00			0		0		0		15:00			3		6		9	
03:15			0		0		0		15:15			7		3		10	
03:30			0		0		0		15:30			7		3		10	
03:45			0		0		0		15:45			9	26	3	15	12	41
04:00			0		0		0		16:00			4		7		11	
04:15			0		0		0		16:15			3		6		9	
04:30			0		5		5		16:30			4		4		8	
04:45			1	1	2	7	3	8	16:45			4	15	6	23	10	38
05:00			0		1		1		17:00			7		7		14	
05:15			0		0		0		17:15			6		6		12	
05:30			0		2		2		17:30			7		2		9	
05:45			1	1	2	5	3	6	17:45			8	28	6	21	14	49
06:00			3		0		3		18:00			8		4		12	
06:15			0		0		0		18:15			8		3		11	
06:30			0		4		4		18:30			9		3		12	
06:45			1	4	3	7	4	11	18:45			8	33	2	12	10	45
07:00			2		3		5		19:00			10		3		13	
07:15			4		3		7		19:15			13		2		15	
07:30			2		6		8		19:30			3		2		5	
07:45			1	9	7	19	8	28	19:45			7	33	2	9	9	42
08:00			1		6		7		20:00			7		1		8	
08:15			2		9		11		20:15			3		2		5	
08:30			1		8		9		20:30			3		2		5	
08:45			3	7	6	29	9	36	20:45			5	18	0	5	5	23
09:00			7		6		13		21:00			2		1		3	
09:15			2		4		6		21:15			2		0		2	
09:30			3		7		10		21:30			1		2		3	
09:45			1	13	5	22	6	35	21:45			1	6	1	4	2	10
10:00			7		1		8		22:00			0		0		0	
10:15			2		2		4		22:15			1		2		3	
10:30			4		3		7		22:30			2		4		6	
10:45			1	14	1	7	2	21	22:45			0	3	1	7	1	10
11:00			1		3		4		23:00			1		1		2	
11:15			3		4		7		23:15			0		1		1	
11:30			1		9		10		23:30			1		0		1	
11:45			3	8	7	23	10	31	23:45			0	2	0	2	0	4
TOTALS				65		121		**186**	**TOTALS**				240		148		**388**
SPLIT %				34.9%		65.1%		**32.4%**	**SPLIT %**				61.9%		38.1%		**67.6%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	305	269	574

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	07:45	**08:15**	**PM Peak Hour**			18:30	16:00	**12:30**
AM Pk Volume			16	30	**42**	**PM Pk Volume**			40	23	**50**
Pk Hr Factor			0.500	0.833	**0.808**	**Pk Hr Factor**			0.769	0.821	**0.833**
7 - 9 Volume	0	0	16	48	**64**	**4 - 6 Volume**	0	0	43	44	**87**
7 - 9 Peak Hour			07:00	07:45	**08:00**	**4 - 6 Peak Hour**			17:00	16:00	**17:00**
7 - 9 Pk Volume	0	0	9	30	**36**	**4 - 6 Pk Volume**	0	0	28	23	**49**
Pk Hr Factor	0.000	0.000	0.563	0.833	**0.818**	**Pk Hr Factor**	0.000	0.000	0.875	0.821	**0.875**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Garden Hwy & Earhart Dr

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	288	268	556

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3		0		3		12:00			5		6		11	
00:15			0		0		0		12:15			4		1		5	
00:30			0		1		1		12:30			2		2		4	
00:45			0	3	0	1	0	4	12:45			5	16	5	14	10	30
01:00			1		0		1		13:00			6		3		9	
01:15			0		0		0		13:15			5		7		12	
01:30			0		1		1		13:30			7		5		12	
01:45			2	3	0	1	2	4	13:45			6	24	5	20	11	44
02:00			0		0		0		14:00			7		4		11	
02:15			0		0		0		14:15			8		7		15	
02:30			0		1		1		14:30			8		3		11	
02:45			3	3	2	3	5	6	14:45			5	28	6	20	11	48
03:00			2		1		3		15:00			4		3		7	
03:15			0		2		2		15:15			6		5		11	
03:30			0		0		0		15:30			9		4		13	
03:45			0	2	0	3	0	5	15:45			5	24	4	16	9	40
04:00			0		1		1		16:00			9		6		15	
04:15			0		0		0		16:15			7		2		9	
04:30			0		2		2		16:30			7		9		16	
04:45			0		0	3	0	3	16:45			8	31	4	21	12	52
05:00			0		0		0		17:00			5		3		8	
05:15			1		0		1		17:15			5		5		10	
05:30			0		1		1		17:30			2		9		11	
05:45			2	3	1	2	3	5	17:45			4	16	3	20	7	36
06:00			2		3		5		18:00			14		9		23	
06:15			0		0		0		18:15			11		1		12	
06:30			2		5		7		18:30			8		2		10	
06:45			0	4	3	11	3	15	18:45			7	40	5	17	12	57
07:00			2		4		6		19:00			6		1		7	
07:15			2		3		5		19:15			7		6		13	
07:30			1		1		2		19:30			7		1		8	
07:45			2	7	2	10	4	17	19:45			8	28	0	8	8	36
08:00			1		8		9		20:00			3		3		6	
08:15			1		2		3		20:15			1		1		2	
08:30			2		9		11		20:30			2		0		2	
08:45			0	4	1	20	1	24	20:45			0	6	0	4	0	10
09:00			6		1		7		21:00			2		0		2	
09:15			1		2		3		21:15			0		0		0	
09:30			2		3		5		21:30			3		0		3	
09:45			0	9	5	11	5	20	21:45			2	7	1	1	3	8
10:00			3		4		7		22:00			3		1		4	
10:15			0		13		13		22:15			0		2		2	
10:30			0		11		11		22:30			0		0		0	
10:45			2	5	7	35	9	40	22:45			0	3	0	3	0	6
11:00			7		7		14		23:00			1		0		1	
11:15			8		7		15		23:15			0		1		1	
11:30			5		3		8		23:30			0		0		0	
11:45			1	21	5	22	6	43	23:45			0	1	1	2	1	3
TOTALS				64		122		**186**	**TOTALS**				224		146		**370**
SPLIT %				34.4%		65.6%		**33.5%**	**SPLIT %**				60.5%		39.5%		**66.5%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	288	268	556

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour			10:45	10:15	**10:30**	**PM Peak Hour**			18:00	17:15	**18:00**
AM Pk Volume			22	38	**49**	**PM Pk Volume**			40	26	**57**
Pk Hr Factor			0.688	0.731	**0.817**	**Pk Hr Factor**			0.714	0.722	**0.620**
7 - 9 Volume	0	0	11	30	**41**	**4 - 6 Volume**	0	0	47	41	**88**
7 - 9 Peak Hour			07:00	07:45	**07:45**	**4 - 6 Peak Hour**			16:00	16:00	**16:00**
7 - 9 Pk Volume	0	0	7	21	**27**	**4 - 6 Pk Volume**	0	0	31	21	**52**
Pk Hr Factor	0.000	0.000	0.875	0.583	**0.614**	**Pk Hr Factor**	0.000	0.000	0.861	0.583	**0.813**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Earhart Dr & Power Line Rd

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	430	436	866

AM Period	NB		SB		EB		WB		TOTAL	
00:00					3		0		3	
00:15					0		0		0	
00:30					0		0		0	
00:45					2	5	1	1	3	6
01:00					2		0		2	
01:15					1		0		1	
01:30					0		1		1	
01:45					2	5	0	1	2	6
02:00					1		0		1	
02:15					0		0		0	
02:30					0		0		0	
02:45					2	3	0		2	3
03:00					1		0		1	
03:15					0		0		0	
03:30					0		1		1	
03:45					0	1	0	1	0	2
04:00					1		4		5	
04:15					0		5		5	
04:30					0		3		3	
04:45					0	1	6	18	6	19
05:00					0		3		3	
05:15					2		4		6	
05:30					0		8		8	
05:45					0	2	14	29	14	31
06:00					2		19		21	
06:15					3		9		12	
06:30					1		14		15	
06:45					0	6	14	56	14	62
07:00					4		7		11	
07:15					3		9		12	
07:30					2		10		12	
07:45					2	11	6	32	8	43
08:00					1		10		11	
08:15					4		12		16	
08:30					1		4		5	
08:45					1	7	4	30	5	37
09:00					4		4		8	
09:15					2		2		4	
09:30					2		8		10	
09:45					2	10	5	19	7	29
10:00					7		6		13	
10:15					5		5		10	
10:30					5		7		12	
10:45					7	24	8	26	15	50
11:00					7		7		14	
11:15					2		2		4	
11:30					5		7		12	
11:45					4	18	11	27	15	45
TOTALS						93		240		**333**
SPLIT %						27.9%		72.1%		**38.5%**

PM Period	NB		SB		EB		WB		TOTAL	
12:00					7		5		12	
12:15					7		5		12	
12:30					2		5		7	
12:45					7	23	10	25	17	48
13:00					9		7		16	
13:15					15		15		30	
13:30					20		8		28	
13:45					11	55	4	34	15	89
14:00					10		13		23	
14:15					11		7		18	
14:30					8		7		15	
14:45					7	36	7	34	14	70
15:00					16		3		19	
15:15					20		8		28	
15:30					24		4		28	
15:45					9	69	4	19	13	88
16:00					25		5		30	
16:15					15		4		19	
16:30					5		3		8	
16:45					5	50	4	16	9	66
17:00					14		3		17	
17:15					5		4		9	
17:30					6		5		11	
17:45					3	28	2	14	5	42
18:00					9		3		12	
18:15					7		6		13	
18:30					8		3		11	
18:45					5	29	3	15	8	44
19:00					6		2		8	
19:15					1		2		3	
19:30					3		3		6	
19:45					3	13	3	10	6	23
20:00					3		2		5	
20:15					1		3		4	
20:30					1		2		3	
20:45					1	6	1	8	2	14
21:00					3		2		5	
21:15					1		5		6	
21:30					6		6		12	
21:45					4	14	1	14	5	28
22:00					7		2		9	
22:15					1		0		1	
22:30					0		3		3	
22:45					0	8	1	6	1	14
23:00					1		1		2	
23:15					0		0		0	
23:30					1		0		1	
23:45					4	6	0	1	4	7
TOTALS						337		196		**533**
SPLIT %						63.2%		36.8%		**61.5%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	430	436	866

	NB	SB	EB	WB	Total
AM Peak Hour			10:00	05:45	**05:45**
AM Pk Volume			24	56	**62**
Pk Hr Factor			0.857	0.737	**0.738**
7 - 9 Volume	0	0	18	62	**80**
7 - 9 Peak Hour			07:00	07:30	**07:30**
7 - 9 Pk Volume	0	0	11	38	**47**
Pk Hr Factor	0.000	0.000	0.688	0.792	**0.734**

	NB	SB	EB	WB	Total
PM Peak Hour			15:15	12:45	**15:15**
PM Pk Volume			78	40	**99**
Pk Hr Factor			0.780	0.667	**0.825**
4 - 6 Volume	0	0	78	30	**108**
4 - 6 Peak Hour			16:00	16:00	**16:00**
4 - 6 Pk Volume	0	0	50	16	**66**
Pk Hr Factor	0.000	0.000	0.500	0.800	**0.550**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Earhart Dr & Power Line Rd

Day: Wednesday
Date: 3/11/2020

City: Sacramento
Project #: CA20_7094_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	451	429	880

AM Period	NB		SB		EB		WB		TOTAL	
00:00					6		0		6	
00:15					2		0		2	
00:30					2		0		2	
00:45					2	12	0		2	12
01:00					0		0		0	
01:15					0		0		0	
01:30					0		1		1	
01:45					2	2	0	1	2	3
02:00					0		0		0	
02:15					1		1		2	
02:30					0		0		0	
02:45					1	2	0	1	1	3
03:00					0		0		0	
03:15					0		0		0	
03:30					0		0		0	
03:45					0		0		0	
04:00					0		0		0	
04:15					0		4		4	
04:30					0		9		9	
04:45					1	1	7	20	8	21
05:00					0		4		4	
05:15					0		3		3	
05:30					1		9		10	
05:45					0	1	15	31	15	32
06:00					5		18		23	
06:15					1		7		8	
06:30					3		11		14	
06:45					1	10	8	44	9	54
07:00					3		5		8	
07:15					6		10		16	
07:30					4		9		13	
07:45					5	18	9	33	14	51
08:00					5		11		16	
08:15					5		11		16	
08:30					2		11		13	
08:45					3	15	8	41	11	56
09:00					5		6		11	
09:15					4		5		9	
09:30					3		8		11	
09:45					3	15	9	28	12	43
10:00					12		2		14	
10:15					2		6		8	
10:30					4		4		8	
10:45					1	19	2	14	3	33
11:00					1		4		5	
11:15					2		5		7	
11:30					3		10		13	
11:45					5	11	7	26	12	37
TOTALS						106		239		**345**
SPLIT %						30.7%		69.3%		**39.2%**

PM Period	NB		SB		EB		WB		TOTAL	
12:00					5		3		8	
12:15					2		2		4	
12:30					10		6		16	
12:45					5	22	7	18	12	40
13:00					12		5		17	
13:15					8		7		15	
13:30					6		6		12	
13:45					7	33	5	23	12	56
14:00					6		8		14	
14:15					11		6		17	
14:30					15		8		23	
14:45					9	41	8	30	17	71
15:00					7		8		15	
15:15					16		5		21	
15:30					22		4		26	
15:45					12	57	4	21	16	78
16:00					29		6		35	
16:15					4		6		10	
16:30					5		6		11	
16:45					4	42	5	23	9	65
17:00					11		7		18	
17:15					6		6		12	
17:30					8		3		11	
17:45					11	36	5	21	16	57
18:00					6		4		10	
18:15					10		3		13	
18:30					10		8		18	
18:45					10	36	3	18	13	54
19:00					10		3		13	
19:15					13		4		17	
19:30					3		1		4	
19:45					6	32	1	9	7	41
20:00					8		1		9	
20:15					4		2		6	
20:30					3		2		5	
20:45					4	19	1	6	5	25
21:00					4		0		4	
21:15					2		1		3	
21:30					2		4		6	
21:45					3	11	3	8	6	19
22:00					2		1		3	
22:15					3		2		5	
22:30					3		6		9	
22:45					1	9	2	11	3	20
23:00					2		1		3	
23:15					2		1		3	
23:30					2		0		2	
23:45					1	7	0	2	1	9
TOTALS						345		190		**535**
SPLIT %						64.5%		35.5%		**60.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	451	429	880

	NB	SB	EB	WB	Total
AM Peak Hour			09:15	05:45	**05:45**
AM Pk Volume			22	51	**60**
Pk Hr Factor			0.458	0.708	**0.652**
7 - 9 Volume	0	0	33	74	**107**
7 - 9 Peak Hour			07:15	07:45	**07:15**
7 - 9 Pk Volume	0	0	20	42	**59**
Pk Hr Factor	0.000	0.000	0.833	0.955	**0.922**
PM Peak Hour			15:15	14:00	**15:15**
PM Pk Volume			79	30	**98**
Pk Hr Factor			0.681	0.938	**0.700**
4 - 6 Volume	0	0	78	44	**122**
4 - 6 Peak Hour			16:00	16:15	**16:00**
4 - 6 Pk Volume	0	0	42	24	**65**
Pk Hr Factor	0.000	0.000	0.362	0.857	**0.464**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Earhart Dr & Power Line Rd

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	446	435	881

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			7		0		7		12:00			7		10		17	
00:15			0		1		1		12:15			5		4		9	
00:30			0		0		0		12:30			3		2		5	
00:45			0	7	0	1	0	8	12:45			4	19	7	23	11	42
01:00			3		0		3		13:00			13		8		21	
01:15			0		1		1		13:15			7		9		16	
01:30			0		1		1		13:30			7		6		13	
01:45			2	5	0	2	2	7	13:45			6	33	4	27	10	60
02:00			2		0		2		14:00			5		7		12	
02:15			0		0		0		14:15			13		6		19	
02:30			0		1		1		14:30			19		10		29	
02:45			3	5	2	3	5	8	14:45			10	47	10	33	20	80
03:00			2		1		3		15:00			8		6		14	
03:15			0		2		2		15:15			12		4		16	
03:30			0		0		0		15:30			20		6		26	
03:45			0	2	0	3	0	5	15:45			10	50	5	21	15	71
04:00			0		3		3		16:00			32		5		37	
04:15			0		5		5		16:15			13		3		16	
04:30			0		5		5		16:30			8		11		19	
04:45			2	2	4	17	6	19	16:45			7	60	4	23	11	83
05:00			0		2		2		17:00			11		4		15	
05:15			1		4		5		17:15			7		8		15	
05:30			0		9		9		17:30			5		7		12	
05:45			3	4	11	26	14	30	17:45			4	27	3	22	7	49
06:00			3		15		18		18:00			10		11		21	
06:15			0		13		13		18:15			15		2		17	
06:30			4		12		16		18:30			9		2		11	
06:45			1	8	8	48	9	56	18:45			8	42	4	19	12	61
07:00			6		7		13		19:00			5		2		7	
07:15			2		5		7		19:15			9		6		15	
07:30			4		5		9		19:30			7		1		8	
07:45			5	17	5	22	10	39	19:45			6	27	0	9	6	36
08:00			2		10		12		20:00			4		1		5	
08:15			2		5		7		20:15			1		1		2	
08:30			2		10		12		20:30			3		0		3	
08:45			2	8	4	29	6	37	20:45			0	8	0	2	0	10
09:00			8		3		11		21:00			2		1		3	
09:15			3		5		8		21:15			0		1		1	
09:30			2		5		7		21:30			3		1		4	
09:45			1	14	6	19	7	33	21:45			4	9	4	7	8	16
10:00			5		7		12		22:00			4		1		5	
10:15			1		17		18		22:15			3		2		5	
10:30			2		12		14		22:30			1		2		3	
10:45			4	12	9	45	13	57	22:45			0	8	1	6	1	14
11:00			6		8		14		23:00			6		0		6	
11:15			8		6		14		23:15			1		1		2	
11:30			7		5		12		23:30			1		0		1	
11:45			3	24	7	26	10	50	23:45			0	8	1	2	1	10
TOTALS				108		241		**349**	**TOTALS**				338		194		**532**
SPLIT %				30.9%		69.1%		**39.6%**	**SPLIT %**				63.5%		36.5%		**60.4%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	446	435	881

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			10:45	05:45	**05:45**	**PM Peak Hour**			15:30	14:00	**15:15**
AM Pk Volume			25	51	**61**	**PM Pk Volume**			75	33	**94**
Pk Hr Factor			0.781	0.850	**0.847**	**Pk Hr Factor**			0.586	0.825	**0.635**
7 - 9 Volume	0	0	25	51	**76**	**4 - 6 Volume**	0	0	87	45	**132**
7 - 9 Peak Hour			07:00	07:45	**07:45**	**4 - 6 Peak Hour**			16:00	16:30	**16:00**
7 - 9 Pk Volume	0	0	17	30	**41**	**4 - 6 Pk Volume**	0	0	60	27	**83**
Pk Hr Factor	0.000	0.000	0.708	0.750	**0.854**	**Pk Hr Factor**	0.000	0.000	0.469	0.614	**0.561**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Powerline Rd & Metro Air Pkwy

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	608	561	1,169

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		0		1		12:00			11		9		20	
00:15			0		0		0		12:15			8		6		14	
00:30			1		0		1		12:30			8		7		15	
00:45			2	4	0		2	4	12:45			7	34	8	30	15	64
01:00			2		0		2		13:00			11		8		19	
01:15			2		1		3		13:15			15		12		27	
01:30			0		1		1		13:30			20		9		29	
01:45			3	7	1	3	4	10	13:45			12	58	5	34	17	92
02:00			1		0		1		14:00			15		16		31	
02:15			1		0		1		14:15			12		12		24	
02:30			0		0		0		14:30			14		7		21	
02:45			2	4	0		2	4	14:45			14	55	9	44	23	99
03:00			0		0		0		15:00			13		6		19	
03:15			0		0		0		15:15			26		8		34	
03:30			0		0		0		15:30			29		5		34	
03:45			0		1	1	1	1	15:45			21	89	4	23	25	112
04:00			0		3		3		16:00			28		7		35	
04:15			0		5		5		16:15			34		5		39	
04:30			0		4		4		16:30			10		6		16	
04:45			0		5	17	5	17	16:45			16	88	3	21	19	109
05:00			0		3		3		17:00			20		4		24	
05:15			2		4		6		17:15			11		3		14	
05:30			1		11		12		17:30			17		6		23	
05:45			2	5	12	30	14	35	17:45			14	62	5	18	19	80
06:00			3		22		25		18:00			16		5		21	
06:15			3		14		17		18:15			14		9		23	
06:30			2		24		26		18:30			10		4		14	
06:45			2	10	18	78	20	88	18:45			8	48	3	21	11	69
07:00			4		21		25		19:00			7		3		10	
07:15			1		19		20		19:15			3		1		4	
07:30			3		20		23		19:30			3		2		5	
07:45			2	10	15	75	17	85	19:45			4	17	2	8	6	25
08:00			3		14		17		20:00			3		3		6	
08:15			3		13		16		20:15			3		2		5	
08:30			1		7		8		20:30			2		1		3	
08:45			2	9	7	41	9	50	20:45			1	9	2	8	3	17
09:00			4		7		11		21:00			3		2		5	
09:15			4		4		8		21:15			3		5		8	
09:30			4		10		14		21:30			8		4		12	
09:45			5	17	7	28	12	45	21:45			3	17	1	12	4	29
10:00			5		3		8		22:00			7		2		9	
10:15			6		6		12		22:15			0		0		0	
10:30			5		8		13		22:30			2		3		5	
10:45			8	24	12	29	20	53	22:45			1	10	2	7	3	17
11:00			9		9		18		23:00			2		1		3	
11:15			4		3		7		23:15			3		0		3	
11:30			5		7		12		23:30			1		0		1	
11:45			4	22	13	32	17	54	23:45			3	9	0	1	3	10
TOTALS				112		334		**446**	**TOTALS**				496		227		**723**
SPLIT %				25.1%		74.9%		**38.2%**	**SPLIT %**				68.6%		31.4%		**61.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	608	561	1,169

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	06:30	**06:30**	**PM Peak Hour**			15:30	14:00	**15:30**
AM Pk Volume			31	82	**91**	**PM Pk Volume**			112	44	**133**
Pk Hr Factor			0.705	0.854	**0.875**	**Pk Hr Factor**			0.824	0.688	**0.853**
7 - 9 Volume	0	0	19	116	**135**	**4 - 6 Volume**	0	0	150	39	**189**
7 - 9 Peak Hour			07:30	07:00	**07:00**	**4 - 6 Peak Hour**			16:00	16:00	**16:00**
7 - 9 Pk Volume	0	0	11	75	**85**	**4 - 6 Pk Volume**	0	0	88	21	**109**
Pk Hr Factor	0.000	0.000	0.917	0.893	**0.850**	**Pk Hr Factor**	0.000	0.000	0.647	0.750	**0.699**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Powerline Rd & Metro Air Pkwy

Day: Wednesday
Date: 3/11/2020

City: Sacramento
Project #: CA20_7094_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	690	594	1,284

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			6		0		6		12:00			7		4		11	
00:15			3		0		3		12:15			7		3		10	
00:30			1		0		1		12:30			11		11		22	
00:45			3	13	0		3	13	12:45			9	34	8	26	17	60
01:00			1		0		1		13:00			14		5		19	
01:15			0		0		0		13:15			9		9		18	
01:30			1		1		2		13:30			8		9		17	
01:45			1	3	0	1	1	4	13:45			9	40	6	29	15	69
02:00			0		0		0		14:00			9		9		18	
02:15			1		1		2		14:15			17		12		29	
02:30			1		0		1		14:30			20		5		25	
02:45			0	2	0	1	0	3	14:45			12	58	8	34	20	92
03:00			1		0		1		15:00			15		8		23	
03:15			0		0		0		15:15			18		5		23	
03:30			0		1		1		15:30			25		5		30	
03:45			0	1	0	1	0	2	15:45			21	79	5	23	26	102
04:00			0		1		1		16:00			40		7		47	
04:15			0		4		4		16:15			22		8		30	
04:30			0		10		10		16:30			20		5		25	
04:45			1	1	7	22	8	23	16:45			25	107	3	23	28	130
05:00			0		3		3		17:00			24		9		33	
05:15			0		4		4		17:15			19		6		25	
05:30			1		10		11		17:30			29		4		33	
05:45			1	2	16	33	17	35	17:45			20	92	6	25	26	117
06:00			3		22		25		18:00			16		7		23	
06:15			1		15		16		18:15			16		7		23	
06:30			5		18		23		18:30			10		5		15	
06:45			1	10	22	77	23	87	18:45			14	56	2	21	16	77
07:00			3		15		18		19:00			12		3		15	
07:15			4		26		30		19:15			15		4		19	
07:30			4		30		34		19:30			4		2		6	
07:45			5	16	13	84	18	100	19:45			8	39	2	11	10	50
08:00			5		16		21		20:00			10		1		11	
08:15			5		18		23		20:15			4		2		6	
08:30			3		14		17		20:30			4		3		7	
08:45			5	18	11	59	16	77	20:45			3	21	1	7	4	28
09:00			6		9		15		21:00			4		2		6	
09:15			6		9		15		21:15			3		1		4	
09:30			3		8		11		21:30			4		4		8	
09:45			5	20	11	37	16	57	21:45			2	13	3	10	5	23
10:00			9		4		13		22:00			4		3		7	
10:15			5		5		10		22:15			4		2		6	
10:30			5		7		12		22:30			3		5		8	
10:45			6	25	5	21	11	46	22:45			1	12	2	12	3	24
11:00			3		6		9		23:00			3		1		4	
11:15			6		5		11		23:15			3		1		4	
11:30			4		12		16		23:30			2		2		4	
11:45			4	17	10	33	14	50	23:45			3	11	0	4	3	15
TOTALS				128		369		**497**	**TOTALS**				562		225		**787**
SPLIT %				25.8%		74.2%		**38.7%**	**SPLIT %**				71.4%		28.6%		**61.3%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	690	594	1,284

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	06:45	**06:45**	**PM Peak Hour**			15:30	13:30	**15:30**
AM Pk Volume			29	93	**105**	**PM Pk Volume**			108	36	**133**
Pk Hr Factor			0.659	0.775	**0.772**	**Pk Hr Factor**			0.675	0.750	**0.707**
7 - 9 Volume	0	0	34	143	**177**	**4 - 6 Volume**	0	0	199	48	**247**
7 - 9 Peak Hour			07:30	07:15	**07:15**	**4 - 6 Peak Hour**			16:00	16:15	**16:00**
7 - 9 Pk Volume	0	0	19	85	**103**	**4 - 6 Pk Volume**	0	0	107	25	**130**
Pk Hr Factor	0.000	0.000	0.950	0.708	**0.757**	**Pk Hr Factor**	0.000	0.000	0.669	0.694	**0.691**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Powerline Rd & Metro Air Pkwy

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	676	566	1,242

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			6		0		6		12:00			10		12		22	
00:15			1		2		3		12:15			7		3		10	
00:30			0		0		0		12:30			5		3		8	
00:45			2	9	0	2	2	11	12:45			4	26	8	26	12	52
01:00			4		0		4		13:00			10		8		18	
01:15			0		0		0		13:15			7		10		17	
01:30			0		1		1		13:30			7		11		18	
01:45			2	6	0	1	2	7	13:45			10	34	8	37	18	71
02:00			2		0		2		14:00			12		10		22	
02:15			0		0		0		14:15			15		14		29	
02:30			0		1		1		14:30			22		4		26	
02:45			3	5	1	2	4	7	14:45			15	64	10	38	25	102
03:00			2		2		4		15:00			12		6		18	
03:15			0		1		1		15:15			17		5		22	
03:30			0		0		0		15:30			21		4		25	
03:45			1	3	1	4	2	7	15:45			18	68	3	18	21	86
04:00			0		2		2		16:00			38		5		43	
04:15			0		5		5		16:15			26		3		29	
04:30			0		5		5		16:30			27		11		38	
04:45			2	2	5	17	7	19	16:45			24	115	4	23	28	138
05:00			1		3		4		17:00			24		5		29	
05:15			3		5		8		17:15			29		8		37	
05:30			0		13		13		17:30			29		7		36	
05:45			2	6	13	34	15	40	17:45			19	101	2	22	21	123
06:00			5		21		26		18:00			19		10		29	
06:15			1		22		23		18:15			17		5		22	
06:30			4		24		28		18:30			8		5		13	
06:45			2	12	19	86	21	98	18:45			8	52	3	23	11	75
07:00			6		15		21		19:00			6		2		8	
07:15			1		15		16		19:15			9		4		13	
07:30			5		16		21		19:30			8		1		9	
07:45			5	17	12	58	17	75	19:45			7	30	2	9	9	39
08:00			4		14		18		20:00			4		1		5	
08:15			3		9		12		20:15			1		1		2	
08:30			3		15		18		20:30			4		0		4	
08:45			6	16	7	45	13	61	20:45			0	9	0	2	0	11
09:00			6		4		10		21:00			2		2		4	
09:15			6		9		15		21:15			0		0		0	
09:30			2		6		8		21:30			5		1		6	
09:45			1	15	7	26	8	41	21:45			3	10	4	7	7	17
10:00			8		6		14		22:00			5		2		7	
10:15			6		18		24		22:15			4		1		5	
10:30			1		11		12		22:30			3		3		6	
10:45			4	19	8	43	12	62	22:45			1	13	1	7	2	20
11:00			10		10		20		23:00			7		0		7	
11:15			12		9		21		23:15			2		2		4	
11:30			6		6		12		23:30			1		1		2	
11:45			6	34	7	32	13	66	23:45			0	10	1	4	1	14
TOTALS				144		350		**494**	**TOTALS**				532		216		**748**
SPLIT %				29.1%		70.9%		**39.8%**	**SPLIT %**				71.1%		28.9%		**60.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	676	566	1,242

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:00	06:00	**06:00**	**PM Peak Hour**			16:00	13:30	**16:00**
AM Pk Volume			34	86	**98**	**PM Pk Volume**			115	43	**138**
Pk Hr Factor			0.708	0.896	**0.875**	**Pk Hr Factor**			0.757	0.768	**0.802**
7 - 9 Volume	0	0	33	103	**136**	**4 - 6 Volume**	0	0	216	45	**261**
7 - 9 Peak Hour			07:00	07:00	**07:00**	**4 - 6 Peak Hour**			16:00	16:30	**16:00**
7 - 9 Pk Volume	0	0	17	58	**75**	**4 - 6 Pk Volume**	0	0	115	28	**138**
Pk Hr Factor	0.000	0.000	0.708	0.906	**0.893**	**Pk Hr Factor**	0.000	0.000	0.757	0.636	**0.802**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Metro Air Pkwy & Lone Tree Rd

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	892	836	1,728

AM Period	NB	SB	EB		WB		TOTAL	
00:00			2		1		3	
00:15			0		0		0	
00:30			2		0		2	
00:45			2	6	0	1	2	7
01:00			3		0		3	
01:15			4		1		5	
01:30			0		1		1	
01:45			2	9	0	2	2	11
02:00			2		0		2	
02:15			0		0		0	
02:30			0		1		1	
02:45			3	5	1	2	4	7
03:00			1		0		1	
03:15			0		1		1	
03:30			1		1		2	
03:45			0	2	1	3	1	5
04:00			1		3		4	
04:15			0		5		5	
04:30			6		4		10	
04:45			4	11	7	19	11	30
05:00			4		3		7	
05:15			10		6		16	
05:30			7		15		22	
05:45			3	24	15	39	18	63
06:00			4		25		29	
06:15			3		27		30	
06:30			1		51		52	
06:45			4	12	43	146	47	158
07:00			5		44		49	
07:15			2		54		56	
07:30			7		31		38	
07:45			3	17	32	161	35	178
08:00			5		25		30	
08:15			4		15		19	
08:30			2		10		12	
08:45			3	14	7	57	10	71
09:00			5		9		14	
09:15			8		4		12	
09:30			4		13		17	
09:45			9	26	9	35	18	61
10:00			9		5		14	
10:15			10		7		17	
10:30			6		9		15	
10:45			7	32	14	35	21	67
11:00			10		9		19	
11:15			3		6		9	
11:30			8		13		21	
11:45			7	28	10	38	17	66
TOTALS				186		538		**724**
SPLIT %				25.7%		74.3%		**41.9%**

PM Period	NB	SB	EB		WB		TOTAL	
12:00			16		14		30	
12:15			11		8		19	
12:30			6		10		16	
12:45			10	43	8	40	18	83
13:00			14		11		25	
13:15			16		14		30	
13:30			18		8		26	
13:45			16	64	9	42	25	106
14:00			12		18		30	
14:15			14		10		24	
14:30			20		14		34	
14:45			26	72	7	49	33	121
15:00			40		6		46	
15:15			32		9		41	
15:30			39		4		43	
15:45			27	138	5	24	32	162
16:00			41		8		49	
16:15			45		7		52	
16:30			19		8		27	
16:45			22	127	3	26	25	153
17:00			23		4		27	
17:15			16		9		25	
17:30			31		12		43	
17:45			23	93	15	40	38	133
18:00			37		9		46	
18:15			34		13		47	
18:30			15		6		21	
18:45			9	95	3	31	12	126
19:00			7		3		10	
19:15			6		3		9	
19:30			3		2		5	
19:45			5	21	1	9	6	30
20:00			3		4		7	
20:15			3		3		6	
20:30			1		3		4	
20:45			4	11	4	14	8	25
21:00			3		3		6	
21:15			6		4		10	
21:30			6		4		10	
21:45			3	18	1	12	4	30
22:00			8		2		10	
22:15			1		1		2	
22:30			1		4		5	
22:45			2	12	2	9	4	21
23:00			4		0		4	
23:15			3		1		4	
23:30			2		1		3	
23:45			3	12	0	2	3	14
TOTALS				706		298		**1004**
SPLIT %				70.3%		29.7%		**58.1%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	892	836	1,728

	NB	SB	EB	WB	Total
AM Peak Hour			11:30	06:30	**06:30**
AM Pk Volume			42	192	**204**
Pk Hr Factor			0.656	0.889	**0.911**
7 - 9 Volume	0	0	31	218	**249**
7 - 9 Peak Hour			07:30	07:00	**07:00**
7 - 9 Pk Volume	0	0	19	161	**178**
Pk Hr Factor	0.000	0.000	0.679	0.745	**0.795**

	NB	SB	EB	WB	Total
PM Peak Hour			15:30	13:45	**15:30**
PM Pk Volume			152	51	**176**
Pk Hr Factor			0.844	0.708	**0.846**
4 - 6 Volume	0	0	220	66	**286**
4 - 6 Peak Hour			16:00	17:00	**16:00**
4 - 6 Pk Volume	0	0	127	40	**153**
Pk Hr Factor	0.000	0.000	0.706	0.667	**0.736**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Metro Air Pkwy & Lone Tree Rd

Day: Wednesday **City:** Sacramento

Date: 3/11/2020 **Project #:** CA20_7094_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	992	856	1,848

AM Period	NB		SB		EB		WB		TOTAL	
00:00					9		1		10	
00:15					4		0		4	
00:30					1		0		1	
00:45					3	17	0	1	3	18
01:00					1		0		1	
01:15					1		0		1	
01:30					2		1		3	
01:45					1	5	0	1	1	6
02:00					0		1		1	
02:15					1		0		1	
02:30					2		1		3	
02:45					0	3	0	2	0	5
03:00					2		0		2	
03:15					0		0		0	
03:30					0		2		2	
03:45					3	5	0	2	3	7
04:00					1		1		2	
04:15					0		5		5	
04:30					4		10		14	
04:45					4	9	9	25	13	34
05:00					9		3		12	
05:15					5		5		10	
05:30					3		13		16	
05:45					2	19	16	37	18	56
06:00					3		28		31	
06:15					2		25		27	
06:30					3		51		54	
06:45					3	11	50	154	53	165
07:00					8		38		46	
07:15					9		61		70	
07:30					8		45		53	
07:45					8	33	24	168	32	201
08:00					5		25		30	
08:15					5		20		25	
08:30					5		18		23	
08:45					9	24	12	75	21	99
09:00					7		11		18	
09:15					6		7		13	
09:30					10		14		24	
09:45					11	34	13	45	24	79
10:00					8		4		12	
10:15					6		4		10	
10:30					7		8		15	
10:45					7	28	9	25	16	53
11:00					5		8		13	
11:15					6		9		15	
11:30					8		15		23	
11:45					4	23	10	42	14	65
TOTALS						211		577		788
SPLIT %						26.8%		73.2%		42.6%

PM Period	NB		SB		EB		WB		TOTAL	
12:00					14		5		19	
12:15					10		4		14	
12:30					12		13		25	
12:45					14	50	9	31	23	81
13:00					13		4		17	
13:15					12		9		21	
13:30					7		8		15	
13:45					11	43	8	29	19	72
14:00					15		8		23	
14:15					22		13		35	
14:30					25		6		31	
14:45					18	80	10	37	28	117
15:00					37		11		48	
15:15					31		5		36	
15:30					33		5		38	
15:45					30	131	6	27	36	158
16:00					46		9		55	
16:15					32		8		40	
16:30					36		5		41	
16:45					31	145	3	25	34	170
17:00					32		10		42	
17:15					31		8		39	
17:30					35		7		42	
17:45					24	122	13	38	37	160
18:00					37		20		57	
18:15					34		11		45	
18:30					19		3		22	
18:45					17	107	4	38	21	145
19:00					12		3		15	
19:15					16		5		21	
19:30					3		2		5	
19:45					6	37	3	13	9	50
20:00					9		1		10	
20:15					4		3		7	
20:30					7		5		12	
20:45					2	22	2	11	4	33
21:00					5		2		7	
21:15					5		1		6	
21:30					3		4		7	
21:45					2	15	3	10	5	25
22:00					3		3		6	
22:15					3		4		7	
22:30					6		6		12	
22:45					1	13	2	15	3	28
23:00					6		1		7	
23:15					3		1		4	
23:30					3		3		6	
23:45					4	16	0	5	4	21
TOTALS						781		279		1060
SPLIT %						73.7%		26.3%		57.4%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	992	856	1,848

	NB	SB	EB	WB	Total
AM Peak Hour			11:45	06:30	**06:30**
AM Pk Volume			40	200	**223**
Pk Hr Factor			0.714	0.820	**0.796**
7 - 9 Volume	0	0	57	243	**300**
7 - 9 Peak Hour			07:00	07:00	**07:00**
7 - 9 Pk Volume	0	0	33	168	**201**
Pk Hr Factor	0.000	0.000	0.917	0.689	**0.718**

	NB	SB	EB	WB	Total
PM Peak Hour			16:00	17:30	**17:30**
PM Pk Volume			145	51	**181**
Pk Hr Factor			0.788	0.638	**0.794**
4 - 6 Volume	0	0	267	63	**330**
4 - 6 Peak Hour			16:00	17:00	**16:00**
4 - 6 Pk Volume	0	0	145	38	**170**
Pk Hr Factor	0.000	0.000	0.788	0.731	**0.773**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Metro Air Pkwy & Lone Tree Rd

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,023	836	1,859

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			5		0		5		12:00			10		13		23	
00:15			2		2		4		12:15			11		9		20	
00:30			1		0		1		12:30			16		8		24	
00:45			3	11	0	2	3	13	12:45			7	44	10	40	17	84
01:00			3		0		3		13:00			9		9		18	
01:15			1		0		1		13:15			13		18		31	
01:30			1		1		2		13:30			9		9		18	
01:45			2	7	0	1	2	8	13:45			13	44	11	47	24	91
02:00			2		0		2		14:00			17		9		26	
02:15			0		0		0		14:15			15		15		30	
02:30			0		1		1		14:30			22		8		30	
02:45			2	4	4	5	6	9	14:45			21	75	12	44	33	119
03:00			2		1		3		15:00			40		8		48	
03:15			1		2		3		15:15			33		6		39	
03:30			0		1		1		15:30			35		6		41	
03:45			2	5	1	5	3	10	15:45			36	144	8	28	44	172
04:00			0		2		2		16:00			52		4		56	
04:15			1		6		7		16:15			36		4		40	
04:30			2		7		9		16:30			49		11		60	
04:45			5	8	6	21	11	29	16:45			36	173	7	26	43	199
05:00			5		4		9		17:00			46		6		52	
05:15			5		9		14		17:15			36		13		49	
05:30			10		18		28		17:30			45		10		55	
05:45			3	23	17	48	20	71	17:45			32	159	9	38	41	197
06:00			6		25		31		18:00			46		13		59	
06:15			1		29		30		18:15			29		7		36	
06:30			6		51		57		18:30			15		5		20	
06:45			2	15	35	140	37	155	18:45			10	100	5	30	15	130
07:00			6		44		50		19:00			5		5		10	
07:15			5		43		48		19:15			13		7		20	
07:30			3		32		35		19:30			8		2		10	
07:45			5	19	24	143	29	162	19:45			8	34	4	18	12	52
08:00			4		19		23		20:00			7		0		7	
08:15			8		12		20		20:15			2		1		3	
08:30			2		14		16		20:30			3		0		3	
08:45			3	17	11	56	14	73	20:45			0	12	0	1	0	13
09:00			8		9		17		21:00			2		2		4	
09:15			3		11		14		21:15			1		0		1	
09:30			5		8		13		21:30			5		1		6	
09:45			2	18	8	36	10	54	21:45			5	13	4	7	9	20
10:00			11		9		20		22:00			5		3		8	
10:15			6		17		23		22:15			5		1		6	
10:30			5		10		15		22:30			3		2		5	
10:45			8	30	16	52	24	82	22:45			1	14	1	7	2	21
11:00			9		12		21		23:00			8		0		8	
11:15			13		8		21		23:15			4		2		6	
11:30			8		9		17		23:30			1		1		2	
11:45			11	41	8	37	19	78	23:45			0	13	1	4	1	17
TOTALS				198		546		**744**	**TOTALS**				825		290		**1115**
SPLIT %				26.6%		73.4%		**40.0%**	**SPLIT %**				74.0%		26.0%		**60.0%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,023	836	1,859

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	06:30	**06:30**	**PM Peak Hour**			15:45	13:00	**16:30**
AM Pk Volume			48	173	**192**	**PM Pk Volume**			173	47	**204**
Pk Hr Factor			0.750	0.848	**0.842**	**Pk Hr Factor**			0.832	0.653	**0.850**
7 - 9 Volume	0	0	36	199	**235**	**4 - 6 Volume**	0	0	332	64	**396**
7 - 9 Peak Hour			07:30	07:00	**07:00**	**4 - 6 Peak Hour**			16:00	17:00	**16:30**
7 - 9 Pk Volume	0	0	20	143	**162**	**4 - 6 Pk Volume**	0	0	173	38	**204**
Pk Hr Factor	0.000	0.000	0.625	0.813	**0.810**	**Pk Hr Factor**	0.000	0.000	0.832	0.731	**0.850**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Lone Tree Rd & SR-99

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	858	816	1,674

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		1		2		12:00			14		15		29	
00:15			0		0		0		12:15			11		7		18	
00:30			2		0		2		12:30			5		11		16	
00:45			2	5	0	1	2	6	12:45			7	37	6	39	13	76
01:00			3		0		3		13:00			15		10		25	
01:15			3		1		4		13:15			15		15		30	
01:30			0		1		1		13:30			19		7		26	
01:45			2	8	0	2	2	10	13:45			16	65	9	41	25	106
02:00			2		0		2		14:00			12		17		29	
02:15			0		0		0		14:15			12		9		21	
02:30			0		1		1		14:30			21		13		34	
02:45			3	5	1	2	4	7	14:45			22	67	7	46	29	113
03:00			1		0		1		15:00			41		7		48	
03:15			0		1		1		15:15			33		9		42	
03:30			0		2		2		15:30			38		3		41	
03:45			1	2	1	4	2	6	15:45			27	139	7	26	34	165
04:00			1		3		4		16:00			38		5		43	
04:15			2		5		7		16:15			42		7		49	
04:30			6		4		10		16:30			25		6		31	
04:45			4	13	7	19	11	32	16:45			21	126	3	21	24	147
05:00			3		3		6		17:00			23		4		27	
05:15			11		6		17		17:15			16		9		25	
05:30			7		16		23		17:30			31		12		43	
05:45			3	24	14	39	17	63	17:45			23	93	14	39	37	132
06:00			3		25		28		18:00			35		9		44	
06:15			4		27		31		18:15			35		14		49	
06:30			1		51		52		18:30			15		4		19	
06:45			3	11	42	145	45	156	18:45			9	94	3	30	12	124
07:00			3		41		44		19:00			6		3		9	
07:15			4		53		57		19:15			6		3		9	
07:30			6		31		37		19:30			3		2		5	
07:45			3	16	31	156	34	172	19:45			5	20	1	9	6	29
08:00			3		26		29		20:00			3		4		7	
08:15			3		13		16		20:15			3		3		6	
08:30			2		11		13		20:30			1		3		4	
08:45			3	11	6	56	9	67	20:45			3	10	4	14	7	24
09:00			5		9		14		21:00			4		3		7	
09:15			5		6		11		21:15			5		4		9	
09:30			3		12		15		21:30			6		4		10	
09:45			8	21	8	35	16	56	21:45			2	17	1	12	3	29
10:00			6		5		11		22:00			9		2		11	
10:15			8		7		15		22:15			1		1		2	
10:30			5		9		14		22:30			1		4		5	
10:45			7	26	13	34	20	60	22:45			2	13	2	9	4	22
11:00			9		7		16		23:00			5		0		5	
11:15			3		6		9		23:15			3		1		4	
11:30			5		12		17		23:30			2		1		3	
11:45			5	22	10	35	15	57	23:45			3	13	0	2	3	15
TOTALS				164		528		**692**	**TOTALS**				694		288		**982**
SPLIT %				23.7%		76.3%		**41.3%**	**SPLIT %**				70.7%		29.3%		**58.7%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	858	816	1,674

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:30	06:30	**06:30**	**PM Peak Hour**			15:30	17:30	**17:30**
AM Pk Volume			35	187	**198**	**PM Pk Volume**			145	49	**173**
Pk Hr Factor			0.625	0.882	**0.868**	**Pk Hr Factor**			0.863	0.875	**0.883**
7 - 9 Volume	0	0	27	212	**239**	**4 - 6 Volume**	0	0	219	60	**279**
7 - 9 Peak Hour			07:00	07:00	**07:00**	**4 - 6 Peak Hour**			16:00	17:00	**16:00**
7 - 9 Pk Volume	0	0	16	156	**172**	**4 - 6 Pk Volume**	0	0	126	39	**147**
Pk Hr Factor	0.000	0.000	0.667	0.736	**0.754**	**Pk Hr Factor**	0.000	0.000	0.750	0.696	**0.750**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Lone Tree Rd & SR-99

Day: Wednesday
Date: 3/11/2020

City: Sacramento
Project #: CA20_7094_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	985	842	1,827

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			8		1		9		12:00			13		4		17	
00:15			5		0		5		12:15			7		5		12	
00:30			1		0		1		12:30			13		11		24	
00:45			2	16	0	1	2	17	12:45			13	46	8	28	21	74
01:00			2		0		2		13:00			11		4		15	
01:15			1		0		1		13:15			16		10		26	
01:30			2		1		3		13:30			8		8		16	
01:45			1	6	0	1	1	7	13:45			12	47	7	29	19	76
02:00			0		1		1		14:00			15		11		26	
02:15			1		0		1		14:15			20		10		30	
02:30			2		1		3		14:30			24		7		31	
02:45			0	3	0	2	0	5	14:45			18	77	7	35	25	112
03:00			2		0		2		15:00			39		10		49	
03:15			0		0		0		15:15			28		5		33	
03:30			0		2		2		15:30			38		5		43	
03:45			3	5	0	2	3	7	15:45			32	137	6	26	38	163
04:00			1		1		2		16:00			46		9		55	
04:15			0		6		6		16:15			34		9		43	
04:30			4		9		13		16:30			39		5		44	
04:45			4	9	9	25	13	34	16:45			31	150	3	26	34	176
05:00			8		3		11		17:00			35		9		44	
05:15			6		5		11		17:15			32		9		41	
05:30			3		13		16		17:30			36		6		42	
05:45			2	19	17	38	19	57	17:45			26	129	13	37	39	166
06:00			3		28		31		18:00			36		19		55	
06:15			1		25		26		18:15			40		11		51	
06:30			3		52		55		18:30			19		3		22	
06:45			1	8	47	152	48	160	18:45			18	113	4	37	22	150
07:00			6		39		45		19:00			14		3		17	
07:15			5		62		67		19:15			16		6		22	
07:30			4		42		46		19:30			5		2		7	
07:45			6	21	24	167	30	188	19:45			6	41	2	13	8	54
08:00			5		24		29		20:00			10		1		11	
08:15			4		20		24		20:15			4		3		7	
08:30			5		18		23		20:30			5		5		10	
08:45			7	21	13	75	20	96	20:45			3	22	2	11	5	33
09:00			7		9		16		21:00			5		2		7	
09:15			6		8		14		21:15			5		1		6	
09:30			6		13		19		21:30			3		5		8	
09:45			8	27	14	44	22	71	21:45			3	16	2	10	5	26
10:00			8		5		13		22:00			3		3		6	
10:15			6		4		10		22:15			2		3		5	
10:30			6		7		13		22:30			6		6		12	
10:45			4	24	11	27	15	51	22:45			1	12	2	14	3	26
11:00			6		6		12		23:00			6		1		7	
11:15			4		8		12		23:15			3		1		4	
11:30			7		15		22		23:30			3		3		6	
11:45			3	20	8	37	11	57	23:45			4	16	0	5	4	21
TOTALS				179		571		**750**	**TOTALS**				806		271		**1077**
SPLIT %				23.9%		76.1%		**41.1%**	**SPLIT %**				74.8%		25.2%		**58.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	985	842	1,827

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	06:30	**06:30**	**PM Peak Hour**			15:45	17:30	**17:30**
AM Pk Volume			36	200	**215**	**PM Pk Volume**			151	49	**187**
Pk Hr Factor			0.692	0.806	**0.802**	**Pk Hr Factor**			0.821	0.645	**0.850**
7 - 9 Volume	0	0	42	242	**284**	**4 - 6 Volume**	0	0	279	63	**342**
7 - 9 Peak Hour			07:00	07:00	**07:00**	**4 - 6 Peak Hour**			16:00	17:00	**16:00**
7 - 9 Pk Volume	0	0	21	167	**188**	**4 - 6 Pk Volume**	0	0	150	37	**176**
Pk Hr Factor	0.000	0.000	0.875	0.673	**0.701**	**Pk Hr Factor**	0.000	0.000	0.815	0.712	**0.800**

Prepared by National Data & Surveying Services

VOLUME

W Elverta Rd Bet. Lone Tree Rd & SR-99

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,026	844	1,870

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			6		0		6		12:00			10		13		23	
00:15			2		2		4		12:15			11		8		19	
00:30			1		0		1		12:30			14		9		23	
00:45			3	12	0	2	3	14	12:45			6	41	12	42	18	83
01:00			3		0		3		13:00			11		8		19	
01:15			1		0		1		13:15			12		12		24	
01:30			1		1		2		13:30			11		8		19	
01:45			1	6	0	1	1	7	13:45			12	46	10	38	22	84
02:00			3		0		3		14:00			18		13		31	
02:15			0		0		0		14:15			18		8		26	
02:30			0		1		1		14:30			21		12		33	
02:45			2	5	3	4	5	9	14:45			23	80	9	42	32	122
03:00			2		1		3		15:00			35		11		46	
03:15			1		2		3		15:15			32		8		40	
03:30			0		1		1		15:30			36		7		43	
03:45			2	5	1	5	3	10	15:45			33	136	7	33	40	169
04:00			0		2		2		16:00			52		3		55	
04:15			1		6		7		16:15			37		5		42	
04:30			1		7		8		16:30			47		14		61	
04:45			5	7	6	21	11	28	16:45			39	175	7	29	46	204
05:00			3		5		8		17:00			45		7		52	
05:15			6		9		15		17:15			37		14		51	
05:30			7		16		23		17:30			43		10		53	
05:45			3	19	16	46	19	65	17:45			33	158	9	40	42	198
06:00			6		26		32		18:00			46		13		59	
06:15			1		34		35		18:15			27		8		35	
06:30			5		55		60		18:30			17		3		20	
06:45			4	16	33	148	37	164	18:45			10	100	6	30	16	130
07:00			8		48		56		19:00			9		8		17	
07:15			6		44		50		19:15			11		7		18	
07:30			4		29		33		19:30			8		2		10	
07:45			5	23	30	151	35	174	19:45			9	37	4	21	13	58
08:00			7		18		25		20:00			6		0		6	
08:15			5		13		18		20:15			2		1		3	
08:30			4		14		18		20:30			3		0		3	
08:45			4	20	12	57	16	77	20:45			1	12	0	1	1	13
09:00			7		5		12		21:00			2		2		4	
09:15			4		10		14		21:15			1		0		1	
09:30			4		8		12		21:30			5		1		6	
09:45			3	18	6	29	9	47	21:45			5	13	4	7	9	20
10:00			9		10		19		22:00			5		3		8	
10:15			7		16		23		22:15			4		1		5	
10:30			4		11		15		22:30			4		2		6	
10:45			8	28	14	51	22	79	22:45			1	14	1	7	2	21
11:00			10		12		22		23:00			8		0		8	
11:15			12		7		19		23:15			4		2		6	
11:30			8		8		16		23:30			1		1		2	
11:45			12	42	8	35	20	77	23:45			0	13	1	4	1	17
TOTALS				201		550		**751**	**TOTALS**				825		294		**1119**
SPLIT %				26.8%		73.2%		**40.2%**	**SPLIT %**				73.7%		26.3%		**59.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,026	844	1,870

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	06:30	**06:30**	**PM Peak Hour**			16:00	17:15	**16:30**
AM Pk Volume			47	180	**203**	**PM Pk Volume**			175	46	**210**
Pk Hr Factor			0.839	0.818	**0.846**	**Pk Hr Factor**			0.841	0.821	**0.861**
7 - 9 Volume	0	0	43	208	**251**	**4 - 6 Volume**	0	0	333	69	**402**
7 - 9 Peak Hour			07:00	07:00	**07:00**	**4 - 6 Peak Hour**			16:00	16:30	**16:30**
7 - 9 Pk Volume	0	0	23	151	**174**	**4 - 6 Pk Volume**	0	0	175	42	**210**
Pk Hr Factor	0.000	0.000	0.719	0.786	**0.777**	**Pk Hr Factor**	0.000	0.000	0.841	0.750	**0.861**

Prepared by National Data & Surveying Services

VOLUME

Power Line Rd Bet. W Elverta Rd & Skyking Rd

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_006

DAILY TOTALS	NB	SB	EB	WB	Total
	298	231	0	0	529

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0		12:00	4		6				10	
00:15	0		0				0		12:15	3		1				4	
00:30	0		0				0		12:30	5		1				6	
00:45	2	2	0				2	2	12:45	2	14	5	13			7	27
01:00	0		1				1		13:00	1		1				2	
01:15	1		0				1		13:15	6		2				8	
01:30	0		0				0		13:30	3		3				6	
01:45	1	2	1	2			2	4	13:45	2	12	2	8			4	20
02:00	0		0				0		14:00	2		1				3	
02:15	1		0				1		14:15	3		7				10	
02:30	0		0				0		14:30	3		5				8	
02:45	0	1	0				0	1	14:45	7	15	4	17			11	32
03:00	0		1				1		15:00	4		12				16	
03:15	1		0				1		15:15	5		3				8	
03:30	1		0				1		15:30	6		3				9	
03:45	1	3	1	2			2	5	15:45	11	26	2	20			13	46
04:00	0		1				1		16:00	16		16				32	
04:15	0		0				0		16:15	14		4				18	
04:30	0		0				0		16:30	12		2				14	
04:45	1	1	0	1			1	2	16:45	8	50	2	24			10	74
05:00	2		1				3		17:00	3		5				8	
05:15	1		1				2		17:15	8		2				10	
05:30	4		1				5		17:30	12		2				14	
05:45	7	14	1	4			8	18	17:45	14	37	3	12			17	49
06:00	9		6				15		18:00	9		3				12	
06:15	4		5				9		18:15	7		5				12	
06:30	7		2				9		18:30	3		2				5	
06:45	4	24	6	19			10	43	18:45	3	22	2	12			5	34
07:00	4		8				12		19:00	2		1				3	
07:15	2		11				13		19:15	3		0				3	
07:30	3		7				10		19:30	1		3				4	
07:45	1	10	5	31			6	41	19:45	2	8	1	5			3	13
08:00	7		8				15		20:00	1		0				1	
08:15	3		1				4		20:15	1		1				2	
08:30	2		2				4		20:30	3		0				3	
08:45	3	15	3	14			6	29	20:45	0	5	2	3			2	8
09:00	1		2				3		21:00	0		0				0	
09:15	3		3				6		21:15	3		0				3	
09:30	2		4				6		21:30	4		1				5	
09:45	3	9	2	11			5	20	21:45	0	7	1	2			1	9
10:00	2		3				5		22:00	1		2				3	
10:15	1		5				6		22:15	0		0				0	
10:30	2		4				6		22:30	1		1				2	
10:45	5	10	3	15			8	25	22:45	0	2	0	3			0	5
11:00	2		5				7		23:00	1		0				1	
11:15	3		1				4		23:15	0		0				0	
11:30	1		3				4		23:30	0		0				0	
11:45	2	8	4	13			6	21	23:45	0	1	0				0	1
TOTALS		99		112				**211**	**TOTALS**		199		119				**318**
SPLIT %		46.9%		53.1%				**39.9%**	**SPLIT %**		62.6%		37.4%				**60.1%**

DAILY TOTALS	NB	SB	EB	WB	Total
	298	231	0	0	529

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	05:45	06:45			**06:45**	**PM Peak Hour**	15:45	14:15			**15:45**
AM Pk Volume	27	32			**45**	**PM Pk Volume**	53	28			**77**
Pk Hr Factor	0.750	0.727			**0.865**	**Pk Hr Factor**	0.828	0.583			**0.602**
7 - 9 Volume	25	45	0	0	**70**	**4 - 6 Volume**	87	36	0	0	**123**
7 - 9 Peak Hour	08:00	07:00			**07:15**	**4 - 6 Peak Hour**	16:00	16:00			**16:00**
7 - 9 Pk Volume	15	31	0	0	**44**	**4 - 6 Pk Volume**	50	24	0	0	**74**
Pk Hr Factor	0.536	0.705	0.000	0.000	**0.733**	**Pk Hr Factor**	0.781	0.375	0.000	0.000	**0.578**

Prepared by National Data & Surveying Services

VOLUME

Power Line Rd Bet. W Elverta Rd & Skyking Rd

Day: Wednesday
Date: 3/11/2020

City: Sacramento
Project #: CA20_7094_006

DAILY TOTALS	NB	SB	EB	WB	Total
	350	235	0	0	585

AM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0	
00:15	0		0				0	
00:30	0		0				0	
00:45	0		0				0	
01:00	0		0				0	
01:15	0		0				0	
01:30	0		0				0	
01:45	0		1	1			1	1
02:00	0		0				0	
02:15	0		0				0	
02:30	2		1				3	
02:45	0	2	0	1			0	3
03:00	0		0				0	
03:15	0		0				0	
03:30	0		1				1	
03:45	0		0	1			0	1
04:00	0		1				1	
04:15	1		0				1	
04:30	0		1				1	
04:45	0	1	0	2			0	3
05:00	1		1				2	
05:15	0		1				1	
05:30	1		3				4	
05:45	5	7	1	6			6	13
06:00	8		6				14	
06:15	3		4				7	
06:30	10		4				14	
06:45	2	23	4	18			6	41
07:00	1		6				7	
07:15	3		12				15	
07:30	2		13				15	
07:45	2	8	10	41			12	49
08:00	3		6				9	
08:15	3		5				8	
08:30	2		3				5	
08:45	4	12	2	16			6	28
09:00	1		3				4	
09:15	2		3				5	
09:30	2		1				3	
09:45	3	8	1	8			4	16
10:00	3		6				9	
10:15	7		3				10	
10:30	4		4				8	
10:45	3	17	5	18			8	35
11:00	5		3				8	
11:15	4		3				7	
11:30	3		2				5	
11:45	6	18	6	14			12	32
TOTALS		96		126				**222**
SPLIT %		43.2%		56.8%				**37.9%**

PM Period	NB		SB		EB	WB	TOTAL	
12:00	5		2				7	
12:15	3		2				5	
12:30	3		6				9	
12:45	2	13	3	13			5	26
13:00	5		2				7	
13:15	6		2				8	
13:30	2		2				4	
13:45	5	18	2	8			7	26
14:00	4		2				6	
14:15	2		4				6	
14:30	8		2				10	
14:45	10	24	4	12			14	36
15:00	3		7				10	
15:15	7		7				14	
15:30	10		4				14	
15:45	9	29	7	25			16	54
16:00	15		8				23	
16:15	21		2				23	
16:30	16		6				22	
16:45	17	69	3	19			20	88
17:00	9		2				11	
17:15	16		2				18	
17:30	17		1				18	
17:45	9	51	2	7			11	58
18:00	9		1				10	
18:15	5		2				7	
18:30	1		2				3	
18:45	9	24	3	8			12	32
19:00	1		1				2	
19:15	6		2				8	
19:30	0		1				1	
19:45	1	8	1	5			2	13
20:00	2		0				2	
20:15	0		0				0	
20:30	1		0				1	
20:45	1	4	1	1			2	5
21:00	0		2				2	
21:15	3		0				3	
21:30	2		0				2	
21:45	1	6	4	6			5	12
22:00	2		0				2	
22:15	1		1				2	
22:30	1		1				2	
22:45	0	4	0	2			0	6
23:00	2		2				4	
23:15	1		0				1	
23:30	0		0				0	
23:45	1	4	1	3			2	7
TOTALS		254		109				**363**
SPLIT %		70.0%		30.0%				**62.1%**

DAILY TOTALS	NB	SB	EB	WB	Total
	350	235	0	0	585

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	05:45	07:00			**07:15**	**PM Peak Hour**	16:00	15:15			**16:00**
AM Pk Volume	26	41			**51**	**PM Pk Volume**	69	26			**88**
Pk Hr Factor	0.650	0.788			**0.850**	**Pk Hr Factor**	0.821	0.813			**0.957**
7 - 9 Volume	20	57	0	0	**77**	**4 - 6 Volume**	120	26	0	0	**146**
7 - 9 Peak Hour	08:00	07:00			**07:15**	**4 - 6 Peak Hour**	16:00	16:00			**16:00**
7 - 9 Pk Volume	12	41	0	0	**51**	**4 - 6 Pk Volume**	69	19	0	0	**88**
Pk Hr Factor	0.750	0.788	0.000	0.000	**0.850**	**Pk Hr Factor**	0.821	0.594	0.000	0.000	**0.957**

Prepared by National Data & Surveying Services

VOLUME

Power Line Rd Bet. W Elverta Rd & Skyking Rd

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_006

DAILY TOTALS	NB	SB	EB	WB	Total
	274	219	0	0	493

AM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0	
00:15	0		0				0	
00:30	0		0				0	
00:45	0		0				0	
01:00	1		0				1	
01:15	1		0				1	
01:30	0		1				1	
01:45	1	3	0	1			1	4
02:00	0		0				0	
02:15	0		0				0	
02:30	0		0				0	
02:45	0		0				0	
03:00	0		0				0	
03:15	0		0				0	
03:30	0		0				0	
03:45	0		1	1			1	1
04:00	1		0				1	
04:15	0		0				0	
04:30	0		0				0	
04:45	0	1	0				0	1
05:00	0		0				0	
05:15	1		1				2	
05:30	1		1				2	
05:45	7	9	2	4			9	13
06:00	0		6				6	
06:15	3		6				9	
06:30	7		9				16	
06:45	5	15	3	24			8	39
07:00	1		4				5	
07:15	4		7				11	
07:30	2		5				7	
07:45	2	9	4	20			6	29
08:00	4		3				7	
08:15	1		6				7	
08:30	2		3				5	
08:45	1	8	3	15			4	23
09:00	4		1				5	
09:15	5		6				11	
09:30	1		3				4	
09:45	2	12	3	13			5	25
10:00	6		1				7	
10:15	7		3				10	
10:30	1		1				2	
10:45	3	17	4	9			7	26
11:00	3		5				8	
11:15	5		3				8	
11:30	1		1				2	
11:45	7	16	2	11			9	27
TOTALS		90		98				**188**
SPLIT %		47.9%		52.1%				**38.1%**

PM Period	NB		SB		EB	WB	TOTAL	
12:00	6		5				11	
12:15	6		3				9	
12:30	3		5				8	
12:45	2	17	1	14			3	31
13:00	3		2				5	
13:15	4		6				10	
13:30	6		2				8	
13:45	4	17	1	11			5	28
14:00	4		2				6	
14:15	4		3				7	
14:30	2		5				7	
14:45	3	13	4	14			7	27
15:00	3		10				13	
15:15	7		6				13	
15:30	5		4				9	
15:45	12	27	3	23			15	50
16:00	9		9				18	
16:15	13		7				20	
16:30	10		1				11	
16:45	5	37	3	20			8	57
17:00	6		3				9	
17:15	6		4				10	
17:30	10		3				13	
17:45	9	31	2	12			11	43
18:00	11		4				15	
18:15	5		5				10	
18:30	2		3				5	
18:45	3	21	1	13			4	34
19:00	1		0				1	
19:15	2		2				4	
19:30	2		2				4	
19:45	1	6	2	6			3	12
20:00	1		1				2	
20:15	2		0				2	
20:30	0		1				1	
20:45	0	3	1	3			1	6
21:00	0		1				1	
21:15	3		0				3	
21:30	1		1				2	
21:45	0	4	0	2			0	6
22:00	0		1				1	
22:15	1		0				1	
22:30	1		1				2	
22:45	2	4	0	2			2	6
23:00	0		0				0	
23:15	1		0				1	
23:30	1		1				2	
23:45	2	4	0	1			2	5
TOTALS		184		121				**305**
SPLIT %		60.3%		39.7%				**61.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	274	219	0	0	493

	NB	SB	EB	WB	Total
AM Peak Hour	11:45	06:00			**05:45**
AM Pk Volume	22	24			**40**
Pk Hr Factor	0.786	0.667			**0.625**
7 - 9 Volume	17	35	0	0	**52**
7 - 9 Peak Hour	07:15	07:00			**07:15**
7 - 9 Pk Volume	12	20	0	0	**31**
Pk Hr Factor	0.750	0.714	0.000	0.000	**0.705**

	NB	SB	EB	WB	Total
PM Peak Hour	15:45	14:30			**15:45**
PM Pk Volume	44	25			**64**
Pk Hr Factor	0.846	0.625			**0.800**
4 - 6 Volume	68	32	0	0	**100**
4 - 6 Peak Hour	16:00	16:00			**16:00**
4 - 6 Pk Volume	37	20	0	0	**57**
Pk Hr Factor	0.712	0.556	0.000	0.000	**0.713**

Prepared by National Data & Surveying Services

VOLUME

Metro Air Pkwy Bet. W Elverta Rd & Skyking Rd

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_007

DAILY TOTALS	NB	SB	EB	WB	Total
	289	283	0	0	572

AM Period	NB		SB		EB	WB	TOTAL	
00:00	1		1				2	
00:15	0		0				0	
00:30	1		0				1	
00:45	0	2	0	1			0	3
01:00	1		0				1	
01:15	3		0				3	
01:30	0		0				0	
01:45	0	4	0				0	4
02:00	0		2				2	
02:15	0		4				4	
02:30	0		1				1	
02:45	1	1	1	8			2	9
03:00	1		0				1	
03:15	0		1				1	
03:30	1		1				2	
03:45	0	2	0	2			0	4
04:00	1		0				1	
04:15	0		0				0	
04:30	7		0				7	
04:45	3	11	2	2			5	13
05:00	7		1				8	
05:15	6		0				6	
05:30	5		3				8	
05:45	1	19	1	5			2	24
06:00	1		0				1	
06:15	0		3				3	
06:30	2		19				21	
06:45	2	5	18	40			20	45
07:00	3		17				20	
07:15	0		37				37	
07:30	4		13				17	
07:45	1	8	17	84			18	92
08:00	0		7				7	
08:15	1		3				4	
08:30	2		3				5	
08:45	0	3	1	14			1	17
09:00	1		2				3	
09:15	3		3				6	
09:30	5		3				8	
09:45	2	11	1	9			3	20
10:00	2		2				4	
10:15	2		1				3	
10:30	0		2				2	
10:45	2	6	4	9			6	15
11:00	0		2				2	
11:15	0		1				1	
11:30	2		2				4	
11:45	2	4	4	9			6	13
TOTALS		76		183				**259**
SPLIT %		29.3%		70.7%				**45.3%**

PM Period	NB		SB		EB	WB	TOTAL	
12:00	0		6				6	
12:15	2		3				5	
12:30	1		2				3	
12:45	5	8	2	13			7	21
13:00	4		2				6	
13:15	1		2				3	
13:30	2		4				6	
13:45	5	12	4	12			9	24
14:00	3		5				8	
14:15	2		1				3	
14:30	3		2				5	
14:45	5	13	1	9			6	22
15:00	9		2				11	
15:15	6		1				7	
15:30	10		2				12	
15:45	5	30	1	6			6	36
16:00	13		2				15	
16:15	11		2				13	
16:30	14		2				16	
16:45	4	42	1	7			5	49
17:00	7		3				10	
17:15	5		6				11	
17:30	15		5				20	
17:45	9	36	12	26			21	62
18:00	24		4				28	
18:15	20		5				25	
18:30	4		3				7	
18:45	2	50	2	14			4	64
19:00	4		2				6	
19:15	3		2				5	
19:30	1		0				1	
19:45	2	10	0	4			2	14
20:00	0		0				0	
20:15	1		0				1	
20:30	0		3				3	
20:45	3	4	0	3			3	7
21:00	0		1				1	
21:15	2		0				2	
21:30	0		1				1	
21:45	0	2	0	2			0	4
22:00	1		1				2	
22:15	1		0				1	
22:30	0		0				0	
22:45	0	2	0	1			0	3
23:00	3		1				4	
23:15	0		1				1	
23:30	1		1				2	
23:45	0	4	0	3			0	7
TOTALS		213		100				**313**
SPLIT %		68.1%		31.9%				**54.7%**

DAILY TOTALS	NB	SB	EB	WB	Total
	289	283	0	0	572

	NB	SB	EB	WB	Total
AM Peak Hour	04:30	06:30			**06:30**
AM Pk Volume	23	91			**98**
Pk Hr Factor	0.821	0.615			**0.662**
7 - 9 Volume	11	98	0	0	**109**
7 - 9 Peak Hour	07:00	07:00			**07:00**
7 - 9 Pk Volume	8	84	0	0	**92**
Pk Hr Factor	0.500	0.568	0.000	0.000	**0.622**

	NB	SB	EB	WB	Total
PM Peak Hour	17:30	17:15			**17:30**
PM Pk Volume	68	27			**94**
Pk Hr Factor	0.708	0.563			**0.839**
4 - 6 Volume	78	33	0	0	**111**
4 - 6 Peak Hour	16:00	17:00			**17:00**
4 - 6 Pk Volume	42	26	0	0	**62**
Pk Hr Factor	0.750	0.542	0.000	0.000	**0.738**

Prepared by National Data & Surveying Services

VOLUME

Metro Air Pkwy Bet. W Elverta Rd & Skyking Rd

Day: Wednesday
Date: 3/11/2020

City: Sacramento
Project #: CA20_7094_007

DAILY TOTALS	NB	SB	EB	WB	Total
	342	288	0	0	630

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	3		1				4		12:00	3		5				8	
00:15	0		0				0		12:15	3		1				4	
00:30	0		0				0		12:30	3		4				7	
00:45	0	3	0	1			0	4	12:45	6	15	0	10			6	25
01:00	0		0				0		13:00	3		1				4	
01:15	1		0				1		13:15	1		0				1	
01:30	1		0				1		13:30	2		0				2	
01:45	0	2	0				0	2	13:45	5	11	0	1			5	12
02:00	0		0				0		14:00	14		2				16	
02:15	0		0				0		14:15	4		3				7	
02:30	1		0				1		14:30	3		2				5	
02:45	0	1	1	1			1	2	14:45	5	26	1	8			6	34
03:00	1		0				1		15:00	4		1				5	
03:15	0		0				0		15:15	7		4				11	
03:30	0		1				1		15:30	9		0				9	
03:45	3	4	0	1			3	5	15:45	8	28	1	6			9	34
04:00	1		0				1		16:00	11		4				15	
04:15	0		0				0		16:15	18		1				19	
04:30	5		1				6		16:30	15		3				18	
04:45	2	8	2	3			4	11	16:45	11	55	2	10			13	65
05:00	13		0				13		17:00	11		4				15	
05:15	1		0				1		17:15	15		4				19	
05:30	2		2				4		17:30	12		5				17	
05:45	3	19	0	2			3	21	17:45	8	46	10	23			18	69
06:00	0		5				5		18:00	28		10				38	
06:15	1		6				7		18:15	16		5				21	
06:30	6		27				33		18:30	11		1				12	
06:45	2	9	17	55			19	64	18:45	4	59	2	18			6	77
07:00	3		25				28		19:00	2		2				4	
07:15	1		31				32		19:15	1		1				2	
07:30	0		18				18		19:30	2		2				4	
07:45	1	5	9	83			10	88	19:45	4	9	3	8			7	17
08:00	1		10				11		20:00	1		3				4	
08:15	1		2				3		20:15	1		1				2	
08:30	2		2				4		20:30	3		4				7	
08:45	2	6	4	18			6	24	20:45	0	5	0	8			0	13
09:00	3		3				6		21:00	0		1				1	
09:15	1		0				1		21:15	2		0				2	
09:30	1		3				4		21:30	0		0				0	
09:45	2	7	1	7			3	14	21:45	0	2	0	1			0	3
10:00	2		1				3		22:00	0		0				0	
10:15	1		2				3		22:15	1		2				3	
10:30	1		1				2		22:30	1		1				2	
10:45	0	4	3	7			3	11	22:45	0	2	1	4			1	6
11:00	4		3				7		23:00	3		0				3	
11:15	0		3				3		23:15	1		0				1	
11:30	4		3				7		23:30	1		1				2	
11:45	3	11	3	12			6	23	23:45	0	5	0	1			0	6
TOTALS		79		190				**269**	**TOTALS**		263		98				**361**
SPLIT %		29.4%		70.6%				**42.7%**	**SPLIT %**		72.9%		27.1%				**57.3%**

DAILY TOTALS	NB	SB	EB	WB	Total
	342	288	0	0	630

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour	04:30	06:30			**06:30**	**PM Peak Hour**	17:30	17:30			**17:30**
AM Pk Volume	21	100			**112**	**PM Pk Volume**	64	30			**94**
Pk Hr Factor	0.404	0.806			**0.848**	**Pk Hr Factor**	0.571	0.750			**0.618**
7 - 9 Volume	11	101	0	0	**112**	**4 - 6 Volume**	101	33	0	0	**134**
7 - 9 Peak Hour	08:00	07:00			**07:00**	**4 - 6 Peak Hour**	16:00	17:00			**17:00**
7 - 9 Pk Volume	6	83	0	0	**88**	**4 - 6 Pk Volume**	55	23	0	0	**69**
Pk Hr Factor	0.750	0.669	0.000	0.000	**0.688**	**Pk Hr Factor**	0.764	0.575	0.000	0.000	**0.908**

Prepared by National Data & Surveying Services

VOLUME

Metro Air Pkwy Bet. W Elverta Rd & Skyking Rd

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_007

DAILY TOTALS	NB	SB	EB	WB	Total
	324	281	0	0	605

AM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0	
00:15	1		0				1	
00:30	1		0				1	
00:45	0	2	0				0	2
01:00	2		0				2	
01:15	0		0				0	
01:30	1		0				1	
01:45	0	3	0				0	3
02:00	0		0				0	
02:15	0		0				0	
02:30	0		0				0	
02:45	1	1	1	1			2	2
03:00	0		0				0	
03:15	1		0				1	
03:30	0		2				2	
03:45	1	2	0	2			1	4
04:00	0		0				0	
04:15	1		1				2	
04:30	3		1				4	
04:45	2	6	1	3			3	9
05:00	6		0				6	
05:15	5		3				8	
05:30	7		2				9	
05:45	1	19	0	5			1	24
06:00	1		4				5	
06:15	1		6				7	
06:30	5		24				29	
06:45	4	11	13	47			17	58
07:00	0		29				29	
07:15	4		28				32	
07:30	0		16				16	
07:45	2	6	13	86			15	92
08:00	3		8				11	
08:15	2		4				6	
08:30	2		1				3	
08:45	2	9	5	18			7	27
09:00	2		2				4	
09:15	0		2				2	
09:30	3		1				4	
09:45	1	6	2	7			3	13
10:00	2		3				5	
10:15	3		1				4	
10:30	1		0				1	
10:45	2	8	3	7			5	15
11:00	1		0				1	
11:15	0		1				1	
11:30	3		2				5	
11:45	4	8	5	8			9	16
TOTALS		81		184				265
SPLIT %		30.6%		69.4%				43.8%

PM Period	NB		SB		EB	WB	TOTAL	
12:00	0		1				1	
12:15	2		2				4	
12:30	5		1				6	
12:45	3	10	3	7			6	17
13:00	4		2				6	
13:15	1		2				3	
13:30	2		1				3	
13:45	2	9	4	9			6	18
14:00	2		3				5	
14:15	3		5				8	
14:30	2		2				4	
14:45	4	11	2	12			6	23
15:00	5		1				6	
15:15	5		2				7	
15:30	7		2				9	
15:45	6	23	4	9			10	32
16:00	13		10				23	
16:15	15		1				16	
16:30	26		4				30	
16:45	20	74	4	19			24	93
17:00	17		8				25	
17:15	26		3				29	
17:30	25		2				27	
17:45	18	86	1	14			19	100
18:00	5		2				7	
18:15	3		10				13	
18:30	2		6				8	
18:45	3	13	1	19			4	32
19:00	1		0				1	
19:15	0		1				1	
19:30	2		2				4	
19:45	2	5	2	5			4	10
20:00	4		1				5	
20:15	0		0				0	
20:30	0		1				1	
20:45	0	4	0	2			0	6
21:00	1		0				1	
21:15	1		1				2	
21:30	2		0				2	
21:45	1	5	0	1			1	6
22:00	0		0				0	
22:15	1		0				1	
22:30	0		0				0	
22:45	0	1	0				0	1
23:00	0		0				0	
23:15	2		0				2	
23:30	0		0				0	
23:45	0	2	0				0	2
TOTALS		243		97				340
SPLIT %		71.5%		28.5%				56.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	324	281	0	0	605

	NB	SB	EB	WB	Total
AM Peak Hour	04:45	06:30			06:30
AM Pk Volume	20	94			107
Pk Hr Factor	0.714	0.810			0.836
7 - 9 Volume	15	104	0	0	119
7 - 9 Peak Hour	07:15	07:00			07:00
7 - 9 Pk Volume	9	86	0	0	92
Pk Hr Factor	0.563	0.741	0.000	0.000	0.719

	NB	SB	EB	WB	Total
PM Peak Hour	16:30	15:45			16:30
PM Pk Volume	89	19			108
Pk Hr Factor	0.856	0.475			0.900
4 - 6 Volume	160	33	0	0	193
4 - 6 Peak Hour	16:30	16:00			16:30
4 - 6 Pk Volume	89	19	0	0	108
Pk Hr Factor	0.856	0.475	0.000	0.000	0.900

Prepared by National Data & Surveying Services

VOLUME

Power Line Rd Bet. Skyking Rd & W Elkhorn Blvd

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_008

DAILY TOTALS	NB	SB	EB	WB	Total
	516	498	0	0	1,014

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		5				5		12:00	7		10				17	
00:15	1		3				4		12:15	2		3				5	
00:30	6		4				10		12:30	5		2				7	
00:45	1	8	5	17			6	25	12:45	8	22	7	22			15	44
01:00	0		2				2		13:00	5		2				7	
01:15	1		7				8		13:15	4		5				9	
01:30	1		0				1		13:30	3		2				5	
01:45	6	8	0	9			6	17	13:45	3	15	7	16			10	31
02:00	4		3				7		14:00	1		2				3	
02:15	4		0				4		14:15	3		9				12	
02:30	4		0				4		14:30	7		5				12	
02:45	0	12	2	5			2	17	14:45	8	19	7	23			15	42
03:00	0		5				5		15:00	6		8				14	
03:15	5		1				6		15:15	8		9				17	
03:30	6		0				6		15:30	10		5				15	
03:45	5	16	4	10			9	26	15:45	18	42	3	25			21	67
04:00	2		3				5		16:00	21		17				38	
04:15	3		3				6		16:15	18		4				22	
04:30	0		0				0		16:30	16		8				24	
04:45	2	7	1	7			3	14	16:45	14	69	7	36			21	105
05:00	1		1				2		17:00	8		4				12	
05:15	4		4				8		17:15	17		4				21	
05:30	5		1				6		17:30	19		3				22	
05:45	13	23	1	7			14	30	17:45	23	67	10	21			33	88
06:00	7		3				10		18:00	19		4				23	
06:15	4		10				14		18:15	7		10				17	
06:30	4		7				11		18:30	4		4				8	
06:45	5	20	7	27			12	47	18:45	4	34	1	19			5	53
07:00	7		16				23		19:00	3		2				5	
07:15	6		10				16		19:15	3		1				4	
07:30	3		15				18		19:30	4		3				7	
07:45	4	20	13	54			17	74	19:45	1	11	2	8			3	19
08:00	3		9				12		20:00	2		4				6	
08:15	4		37				41		20:15	7		9				16	
08:30	7		7				14		20:30	2		5				7	
08:45	4	18	9	62			13	80	20:45	1	12	8	26			9	38
09:00	7		3				10		21:00	0		4				4	
09:15	2		9				11		21:15	8		9				17	
09:30	1		5				6		21:30	2		3				5	
09:45	2	12	12	29			14	41	21:45	0	10	4	20			4	30
10:00	3		3				6		22:00	1		5				6	
10:15	3		6				9		22:15	3		0				3	
10:30	2		2				4		22:30	6		3				9	
10:45	5	13	10	21			15	34	22:45	8	18	0	8			8	26
11:00	2		5				7		23:00	8		2				10	
11:15	4		3				7		23:15	5		3				8	
11:30	5		5				10		23:30	4		1				5	
11:45	5	16	7	20			12	36	23:45	7	24	0	6			7	30
TOTALS	173		268				**441**		**TOTALS**	343		230				**573**	
SPLIT %	39.2%		60.8%				**43.5%**		**SPLIT %**	59.9%		40.1%				**56.5%**	

DAILY TOTALS	NB	SB	EB	WB	Total
	516	498	0	0	1,014

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	05:15	07:30			**07:30**	**PM Peak Hour**	17:15	16:00			**15:45**
AM Pk Volume	29	74			**88**	**PM Pk Volume**	78	36			**105**
Pk Hr Factor	0.558	0.500			**0.537**	**Pk Hr Factor**	0.848	0.529			**0.691**
7 - 9 Volume	38	116	0	0	**154**	**4 - 6 Volume**	136	57	0	0	**193**
7 - 9 Peak Hour	07:00	07:30			**07:30**	**4 - 6 Peak Hour**	16:00	16:00			**16:00**
7 - 9 Pk Volume	20	74	0	0	**88**	**4 - 6 Pk Volume**	69	36	0	0	**105**
Pk Hr Factor	0.714	0.500	0.000	0.000	**0.537**	**Pk Hr Factor**	0.821	0.529	0.000	0.000	**0.691**

Prepared by National Data & Surveying Services

VOLUME

Power Line Rd Bet. Skyking Rd & W Elkhorn Blvd

Day: Wednesday
Date: 3/11/2020

City: Sacramento
Project #: CA20_7094_008

DAILY TOTALS	NB	SB	EB	WB	Total
	619	472	0	0	1,091

AM Period	NB		SB		EB	WB	TOTAL	
00:00	0		1				1	
00:15	0		3				3	
00:30	4		4				8	
00:45	0	4	4	12			4	16
01:00	6		7				13	
01:15	1		7				8	
01:30	1		4				5	
01:45	0	8	7	25			7	33
02:00	0		2				2	
02:15	3		0				3	
02:30	5		2				7	
02:45	2	10	0	4			2	14
03:00	5		0				5	
03:15	9		3				12	
03:30	4		3				7	
03:45	3	21	0	6			3	27
04:00	4		1				5	
04:15	9		0				9	
04:30	0		1				1	
04:45	2	15	3	5			5	20
05:00	4		2				6	
05:15	2		1				3	
05:30	1		4				5	
05:45	6	13	2	9			8	22
06:00	11		9				20	
06:15	4		4				8	
06:30	9		8				17	
06:45	6	30	7	28			13	58
07:00	8		6				14	
07:15	3		16				19	
07:30	4		31				35	
07:45	7	22	14	67			21	89
08:00	3		10				13	
08:15	3		42				45	
08:30	8		12				20	
08:45	4	18	5	69			9	87
09:00	2		3				5	
09:15	6		7				13	
09:30	6		5				11	
09:45	2	16	3	18			5	34
10:00	5		9				14	
10:15	10		8				18	
10:30	3		5				8	
10:45	7	25	8	30			15	55
11:00	5		4				9	
11:15	6		4				10	
11:30	5		5				10	
11:45	1	17	8	21			9	38
TOTALS		199		294				**493**
SPLIT %		40.4%		59.6%				**45.2%**

PM Period	NB		SB		EB	WB	TOTAL	
12:00	4		3				7	
12:15	3		2				5	
12:30	3		10				13	
12:45	3	13	6	21			9	34
13:00	3		4				7	
13:15	12		5				17	
13:30	2		6				8	
13:45	7	24	2	17			9	41
14:00	4		1				5	
14:15	5		5				10	
14:30	10		2				12	
14:45	13	32	4	12			17	44
15:00	8		3				11	
15:15	14		9				23	
15:30	12		5				17	
15:45	15	49	4	21			19	70
16:00	18		6				24	
16:15	26		3				29	
16:30	18		8				26	
16:45	26	88	8	25			34	113
17:00	12		9				21	
17:15	21		3				24	
17:30	24		1				25	
17:45	14	71	3	16			17	87
18:00	14		5				19	
18:15	10		8				18	
18:30	5		2				7	
18:45	12	41	5	20			17	61
19:00	4		1				5	
19:15	3		2				5	
19:30	4		3				7	
19:45	2	13	2	8			4	21
20:00	7		3				10	
20:15	7		1				8	
20:30	4		5				9	
20:45	7	25	3	12			10	37
21:00	4		5				9	
21:15	12		2				14	
21:30	7		1				8	
21:45	2	25	3	11			5	36
22:00	5		2				7	
22:15	7		3				10	
22:30	3		2				5	
22:45	2	17	1	8			3	25
23:00	6		1				7	
23:15	2		6				8	
23:30	6		0				6	
23:45	8	22	0	7			8	29
TOTALS		420		178				**598**
SPLIT %		70.2%		29.8%				**54.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	619	472	0	0	1,091

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	05:45	07:30			**07:30**	**PM Peak Hour**	16:00	16:15			**16:00**
AM Pk Volume	30	97			**114**	**PM Pk Volume**	88	28			**113**
Pk Hr Factor	0.682	0.577			**0.633**	**Pk Hr Factor**	0.846	0.778			**0.831**
7 - 9 Volume	40	136	0	0	**176**	**4 - 6 Volume**	159	41	0	0	**200**
7 - 9 Peak Hour	07:00	07:30			**07:30**	**4 - 6 Peak Hour**	16:00	16:15			**16:00**
7 - 9 Pk Volume	22	97	0	0	**114**	**4 - 6 Pk Volume**	88	28	0	0	**113**
Pk Hr Factor	0.688	0.577	0.000	0.000	**0.633**	**Pk Hr Factor**	0.846	0.778	0.000	0.000	**0.831**

Prepared by National Data & Surveying Services

VOLUME

Power Line Rd Bet. Skyking Rd & W Elkhorn Blvd

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_008

DAILY TOTALS	NB	SB	EB	WB	Total
	588	447	0	0	1,035

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		1				1		12:00	13		6				19	
00:15	1		0				1		12:15	4		5				9	
00:30	1		0				1		12:30	5		9				14	
00:45	1	3	0	1			1	4	12:45	3	25	3	23			6	48
01:00	5		1				6		13:00	4		13				17	
01:15	9		0				9		13:15	2		7				9	
01:30	5		3				8		13:30	12		2				14	
01:45	6	25	2	6			8	31	13:45	4	22	8	30			12	52
02:00	6		1				7		14:00	5		6				11	
02:15	0		0				0		14:15	4		4				8	
02:30	0		3				3		14:30	5		8				13	
02:45	1	7	0	4			1	11	14:45	7	21	5	23			12	44
03:00	3		0				3		15:00	8		6				14	
03:15	10		7				17		15:15	10		10				20	
03:30	5		0				5		15:30	13		7				20	
03:45	8	26	1	8			9	34	15:45	15	46	7	30			22	76
04:00	4		0				4		16:00	14		6				20	
04:15	4		0				4		16:15	21		3				24	
04:30	5		0				5		16:30	27		5				32	
04:45	2	15	3	3			5	18	16:45	26	88	2	16			28	104
05:00	1		1				2		17:00	25		7				32	
05:15	3		3				6		17:15	32		3				35	
05:30	4		2				6		17:30	33		3				36	
05:45	3	11	3	9			6	20	17:45	19	109	1	14			20	123
06:00	1		8				9		18:00	10		3				13	
06:15	4		8				12		18:15	3		8				11	
06:30	4		8				12		18:30	3		5				8	
06:45	7	16	5	29			12	45	18:45	6	22	1	17			7	39
07:00	2		7				9		19:00	2		2				4	
07:15	2		15				17		19:15	1		1				2	
07:30	4		9				13		19:30	2		1				3	
07:45	7	15	11	42			18	57	19:45	8	13	4	8			12	21
08:00	7		11				18		20:00	3		8				11	
08:15	4		31				35		20:15	3		3				6	
08:30	3		6				9		20:30	5		2				7	
08:45	1	15	6	54			7	69	20:45	7	18	1	14			8	32
09:00	5		7				12		21:00	8		2				10	
09:15	4		7				11		21:15	6		7				13	
09:30	3		8				11		21:30	3		1				4	
09:45	5	17	5	27			10	44	21:45	0	17	4	14			4	31
10:00	9		1				10		22:00	1		4				5	
10:15	10		2				12		22:15	1		6				7	
10:30	2		17				19		22:30	2		7				9	
10:45	5	26	4	24			9	50	22:45	2	6	3	20			5	26
11:00	3		7				10		23:00	1		2				3	
11:15	6		5				11		23:15	3		5				8	
11:30	1		2				3		23:30	5		5				10	
11:45	5	15	3	17			8	32	23:45	1	10	2	14			3	24
TOTALS		191		224				**415**	**TOTALS**		397		223				**620**
SPLIT %		46.0%		54.0%				**40.1%**	**SPLIT %**		64.0%		36.0%				**59.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	588	447	0	0	1,035

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	03:15	07:30			**07:30**	**PM Peak Hour**	16:45	12:30			**16:45**
AM Pk Volume	27	62			**84**	**PM Pk Volume**	116	32			**131**
Pk Hr Factor	0.675	0.500			**0.600**	**Pk Hr Factor**	0.879	0.615			**0.910**
7 - 9 Volume	30	96	0	0	**126**	**4 - 6 Volume**	197	30	0	0	**227**
7 - 9 Peak Hour	07:30	07:30			**07:30**	**4 - 6 Peak Hour**	16:45	16:15			**16:45**
7 - 9 Pk Volume	22	62	0	0	**84**	**4 - 6 Pk Volume**	116	17	0	0	**131**
Pk Hr Factor	0.786	0.500	0.000	0.000	**0.600**	**Pk Hr Factor**	0.879	0.607	0.000	0.000	**0.910**

Prepared by National Data & Surveying Services

VOLUME

Metro Air Pkwy Bet. Skyking Rd & W Elkhorn Blvd

Day: Tuesday
Date: 3/10/2020

City: Sacramento
Project #: CA20_7094_009

DAILY TOTALS	NB	SB	EB	WB	Total
	839	812	0	0	1,651

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	3		3				6		12:00	15		15				30	
00:15	2		2				4		12:15	20		17				37	
00:30	4		2				6		12:30	19		9				28	
00:45	3	12	4	11			7	23	12:45	19	73	21	62			40	135
01:00	0		4				4		13:00	6		36				42	
01:15	2		0				2		13:15	9		7				16	
01:30	2		2				4		13:30	10		10				20	
01:45	0	4	0	6			0	10	13:45	6	31	8	61			14	92
02:00	0		6				6		14:00	15		9				24	
02:15	3		10				13		14:15	8		12				20	
02:30	4		1				5		14:30	6		9				15	
02:45	5	12	3	20			8	32	14:45	6	35	9	39			15	74
03:00	3		2				5		15:00	13		9				22	
03:15	7		5				12		15:15	7		2				9	
03:30	4		2				6		15:30	9		3				12	
03:45	2	16	1	10			3	26	15:45	7	36	3	17			10	53
04:00	1		2				3		16:00	15		8				23	
04:15	4		1				5		16:15	17		5				22	
04:30	5		6				11		16:30	12		12				24	
04:45	3	13	6	15			9	28	16:45	18	62	8	33			26	95
05:00	2		11				13		17:00	14		22				36	
05:15	6		11				17		17:15	10		12				22	
05:30	4		4				8		17:30	13		10				23	
05:45	5	17	2	28			7	45	17:45	29	66	13	57			42	123
06:00	12		2				14		18:00	9		41				50	
06:15	12		3				15		18:15	18		25				43	
06:30	24		9				33		18:30	18		22				40	
06:45	16	64	6	20			22	84	18:45	8	53	14	102			22	155
07:00	13		6				19		19:00	11		11				22	
07:15	19		14				33		19:15	14		6				20	
07:30	12		34				46		19:30	11		8				19	
07:45	10	54	15	69			25	123	19:45	17	53	11	36			28	89
08:00	22		11				33		20:00	12		11				23	
08:15	9		4				13		20:15	12		15				27	
08:30	15		7				22		20:30	7		6				13	
08:45	9	55	15	37			24	92	20:45	4	35	3	35			7	70
09:00	7		20				27		21:00	7		14				21	
09:15	9		5				14		21:15	10		9				19	
09:30	8		8				16		21:30	9		5				14	
09:45	7	31	8	41			15	72	21:45	7	33	9	37			16	70
10:00	9		4				13		22:00	5		2				7	
10:15	2		3				5		22:15	4		1				5	
10:30	3		14				17		22:30	2		0				2	
10:45	2	16	3	24			5	40	22:45	1	12	3	6			4	18
11:00	7		5				12		23:00	8		4				12	
11:15	10		8				18		23:15	1		3				4	
11:30	9		3				12		23:30	2		7				9	
11:45	13	39	11	27			24	66	23:45	6	17	5	19			11	36
TOTALS		333		308				**641**	**TOTALS**		506		504				**1010**
SPLIT %		52.0%		48.0%				**38.8%**	**SPLIT %**		50.1%		49.9%				**61.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	839	812	0	0	1,651

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	06:30	07:15			**07:15**	**PM Peak Hour**	17:45	18:00			**17:45**
AM Pk Volume	72	74			**137**	**PM Pk Volume**	74	102			**175**
Pk Hr Factor	0.750	0.544			**0.745**	**Pk Hr Factor**	0.638	0.622			**0.875**
7 - 9 Volume	109	106	0	0	**215**	**4 - 6 Volume**	128	90	0	0	**218**
7 - 9 Peak Hour	07:15	07:15			**07:15**	**4 - 6 Peak Hour**	17:00	17:00			**17:00**
7 - 9 Pk Volume	63	74	0	0	**137**	**4 - 6 Pk Volume**	66	57	0	0	**123**
Pk Hr Factor	0.716	0.544	0.000	0.000	**0.745**	**Pk Hr Factor**	0.569	0.648	0.000	0.000	**0.732**

Prepared by National Data & Surveying Services

VOLUME

Metro Air Pkwy Bet. Skyking Rd & W Elkhorn Blvd

Day: Wednesday
Date: 3/11/2020

City: Sacramento
Project #: CA20_7094_009

DAILY TOTALS	NB	SB	EB	WB	Total
	913	891	0	0	1,804

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		4				4		12:00	14		11				25	
00:15	0		2				2		12:15	13		11				24	
00:30	2		1				3		12:30	12		17				29	
00:45	5	7	2	9			7	16	12:45	15	54	21	60			36	114
01:00	2		2				4		13:00	20		25				45	
01:15	5		4				9		13:15	5		12				17	
01:30	2		3				5		13:30	8		15				23	
01:45	0	9	0	9			0	18	13:45	18	51	8	60			26	111
02:00	5		0				5		14:00	16		18				34	
02:15	0		8				8		14:15	6		16				22	
02:30	1		9				10		14:30	14		14				28	
02:45	6	12	1	18			7	30	14:45	12	48	8	56			20	104
03:00	4		1				5		15:00	7		13				20	
03:15	3		6				9		15:15	11		9				20	
03:30	7		2				9		15:30	12		9				21	
03:45	2	16	3	12			5	28	15:45	15	45	5	36			20	81
04:00	4		2				6		16:00	10		13				23	
04:15	3		3				6		16:15	23		8				31	
04:30	3		1				4		16:30	21		17				38	
04:45	2	12	3	9			5	21	16:45	27	81	11	49			38	130
05:00	5		11				16		17:00	13		18				31	
05:15	6		6				12		17:15	15		12				27	
05:30	19		3				22		17:30	17		20				37	
05:45	5	35	3	23			8	58	17:45	18	63	14	64			32	127
06:00	7		10				17		18:00	18		32				50	
06:15	24		5				29		18:15	14		21				35	
06:30	29		12				41		18:30	13		11				24	
06:45	19	79	10	37			29	116	18:45	9	54	10	74			19	128
07:00	11		15				26		19:00	8		7				15	
07:15	21		13				34		19:15	15		8				23	
07:30	20		35				55		19:30	8		13				21	
07:45	12	64	18	81			30	145	19:45	12	43	5	33			17	76
08:00	17		15				32		20:00	10		18				28	
08:15	11		5				16		20:15	9		8				17	
08:30	17		6				23		20:30	3		12				15	
08:45	13	58	15	41			28	99	20:45	2	24	5	43			7	67
09:00	10		22				32		21:00	5		3				8	
09:15	5		9				14		21:15	3		10				13	
09:30	11		6				17		21:30	10		6				16	
09:45	10	36	12	49			22	85	21:45	5	23	6	25			11	48
10:00	9		3				12		22:00	7		5				12	
10:15	4		9				13		22:15	5		2				7	
10:30	5		7				12		22:30	3		8				11	
10:45	6	24	11	30			17	54	22:45	3	18	3	18			6	36
11:00	6		7				13		23:00	2		4				6	
11:15	10		7				17		23:15	8		10				18	
11:30	7		18				25		23:30	6		0				6	
11:45	14	37	7	39			21	76	23:45	4	20	2	16			6	36
TOTALS		389		357				**746**	**TOTALS**		524		534				**1058**
SPLIT %		52.1%		47.9%				**41.4%**	**SPLIT %**		49.5%		50.5%				**58.6%**

DAILY TOTALS	NB	SB	EB	WB	Total
	913	891	0	0	1,804

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour	06:15	07:00			**07:15**	**PM Peak Hour**	16:15	17:30			**17:30**
AM Pk Volume	83	81			**151**	**PM Pk Volume**	84	87			**154**
Pk Hr Factor	0.716	0.579			**0.686**	**Pk Hr Factor**	0.778	0.680			**0.770**
7 - 9 Volume	122	122	0	0	**244**	**4 - 6 Volume**	144	113	0	0	**257**
7 - 9 Peak Hour	07:15	07:00			**07:15**	**4 - 6 Peak Hour**	16:15	17:00			**16:15**
7 - 9 Pk Volume	70	81	0	0	**151**	**4 - 6 Pk Volume**	84	64	0	0	**138**
Pk Hr Factor	0.833	0.579	0.000	0.000	**0.686**	**Pk Hr Factor**	0.778	0.800	0.000	0.000	**0.908**

Prepared by National Data & Surveying Services

VOLUME

Metro Air Pkwy Bet. Skyking Rd & W Elkhorn Blvd

Day: Thursday
Date: 3/12/2020

City: Sacramento
Project #: CA20_7094_009

DAILY TOTALS	NB	SB	EB	WB	Total
	859	817	0	0	1,676

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	3		2				5		12:00	7		4				11	
00:15	12		5				17		12:15	21		10				31	
00:30	2		6				8		12:30	17		9				26	
00:45	5	22	0	13			5	35	12:45	16	61	9	32			25	93
01:00	1		9				10		13:00	17		43				60	
01:15	3		8				11		13:15	6		3				9	
01:30	5		1				6		13:30	4		14				18	
01:45	5	14	0	18			5	32	13:45	17	44	16	76			33	120
02:00	4		5				9		14:00	13		11				24	
02:15	2		12				14		14:15	8		15				23	
02:30	0		6				6		14:30	8		12				20	
02:45	0	6	1	24			1	30	14:45	11	40	10	48			21	88
03:00	0		0				0		15:00	9		10				19	
03:15	9		0				9		15:15	8		7				15	
03:30	4		5				9		15:30	7		8				15	
03:45	4	17	1	6			5	23	15:45	12	36	9	34			21	70
04:00	0		3				3		16:00	16		5				21	
04:15	1		1				2		16:15	8		7				15	
04:30	0		0				0		16:30	22		5				27	
04:45	1	2	5	9			6	11	16:45	25	71	6	23			31	94
05:00	1		16				17		17:00	17		11				28	
05:15	9		3				12		17:15	10		10				20	
05:30	9		3				12		17:30	15		9				24	
05:45	15	34	4	26			19	60	17:45	9	51	13	43			22	94
06:00	5		6				11		18:00	13		41				54	
06:15	13		6				19		18:15	7		13				20	
06:30	26		6				32		18:30	9		11				20	
06:45	14	58	8	26			22	84	18:45	8	37	9	74			17	111
07:00	16		11				27		19:00	7		9				16	
07:15	27		13				40		19:15	11		9				20	
07:30	12		27				39		19:30	10		10				20	
07:45	11	66	22	73			33	139	19:45	17	45	12	40			29	85
08:00	14		14				28		20:00	16		12				28	
08:15	15		7				22		20:15	11		14				25	
08:30	15		5				20		20:30	7		7				14	
08:45	17	61	16	42			33	103	20:45	3	37	12	45			15	82
09:00	7		26				33		21:00	5		5				10	
09:15	7		9				16		21:15	5		12				17	
09:30	12		11				23		21:30	7		6				13	
09:45	9	35	4	50			13	85	21:45	8	25	1	24			9	49
10:00	3		4				7		22:00	2		8				10	
10:15	7		4				11		22:15	5		1				6	
10:30	14		8				22		22:30	5		3				8	
10:45	5	29	4	20			9	49	22:45	1	13	2	14			3	27
11:00	4		14				18		23:00	5		0				5	
11:15	6		5				11		23:15	7		9				16	
11:30	14		8				22		23:30	2		6				8	
11:45	11	35	13	40			24	75	23:45	6	20	2	17			8	37
TOTALS		379		347				**726**	**TOTALS**		480		470				**950**
SPLIT %		52.2%		47.8%				**43.3%**	**SPLIT %**		50.5%		49.5%				**56.7%**

DAILY TOTALS	NB	SB	EB	WB	Total
	859	817	0	0	1,676

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour	06:30	07:15			**07:15**	**PM Peak Hour**	16:30	17:45			**12:15**
AM Pk Volume	83	76			**140**	**PM Pk Volume**	74	78			**142**
Pk Hr Factor	0.769	0.704			**0.875**	**Pk Hr Factor**	0.740	0.476			**0.592**
7 - 9 Volume	127	115	0	0	**242**	**4 - 6 Volume**	122	66	0	0	**188**
7 - 9 Peak Hour	07:00	07:15			**07:15**	**4 - 6 Peak Hour**	16:30	17:00			**16:30**
7 - 9 Pk Volume	66	76	0	0	**140**	**4 - 6 Pk Volume**	74	43	0	0	**106**
Pk Hr Factor	0.611	0.704	0.000	0.000	**0.875**	**Pk Hr Factor**	0.740	0.827	0.000	0.000	**0.855**

Appendix B

Analysis Worksheets for Existing (2020) Conditions (Intersections)

Intersection						
Int Delay, s/veh	5.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	1	2	1	4	9
Future Vol, veh/h	21	1	2	1	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	1	2	1	4	9

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	20	3	0	0	3	0
Stage 1	3	-	-	-	-	-
Stage 2	17	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	997	1081	-	-	1619	-
Stage 1	1020	-	-	-	-	-
Stage 2	1006	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	995	1081	-	-	1619	-
Mov Cap-2 Maneuver	995	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	2.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	999	1619	-
HCM Lane V/C Ratio	-	-	0.022	0.002	-
HCM Control Delay (s)	-	-	8.7	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	5.3					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	0	36	12	0	3
Future Vol, veh/h	4	0	36	12	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	36	12	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	4	0	88	4
Stage 1	-	-	-	-	4	-
Stage 2	-	-	-	-	84	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1618	-	913	1080
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	939	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1618	-	893	1080
Mov Cap-2 Maneuver	-	-	-	-	893	-
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	918	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.5	8.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1080	-	-	1618	-
HCM Lane V/C Ratio	0.003	-	-	0.022	-
HCM Control Delay (s)	8.3	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	8	0	39	50	0	2	2	2	2	4	0
Future Vol, veh/h	0	8	0	39	50	0	2	2	2	2	4	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	8	0	39	50	0	2	2	2	2	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7.5	7	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	0%	44%	33%
Vol Thru, %	33%	100%	56%	67%
Vol Right, %	33%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	8	89	6
LT Vol	2	0	39	2
Through Vol	2	8	50	4
RT Vol	2	0	0	0
Lane Flow Rate	6	8	89	6
Geometry Grp	1	1	1	1
Degree of Util (X)	0.007	0.009	0.1	0.007
Departure Headway (Hd)	3.973	4.02	4.047	4.173
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	896	890	889	853
Service Time	2.02	2.045	2.057	2.22
HCM Lane V/C Ratio	0.007	0.009	0.1	0.007
HCM Control Delay	7	7.1	7.5	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0.3	0

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	12	0	2	97	76	1	7
Future Vol, veh/h	12	0	2	97	76	1	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	195	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	12	0	2	97	76	1	7

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	0	-	12	0	282	12
Stage 1	-	-	-	-	-	12	-
Stage 2	-	-	-	-	-	270	-
Critical Hdwy	-	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	1607	-	708	1069
Stage 1	-	-	-	-	-	1011	-
Stage 2	-	-	-	-	-	775	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	~ -51	~ -51	-	708	1069
Mov Cap-2 Maneuver	-	-	-	-	-	708	-
Stage 1	-	-	-	-	-	1011	-
Stage 2	-	-	-	-	-	775	-

Approach	EB	WB	NB
HCM Control Delay, s	0		8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1005	-	-	+	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	8.6	-	-	-	-
HCM Lane LOS	A	-	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	12	11	105	297	66	89
v/c Ratio	0.01	0.01	0.07	0.19	0.10	0.12
Control Delay	8.8	0.0	7.3	0.3	4.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	0.0	7.3	0.3	4.3	6.0
Queue Length 50th (ft)	0	0	0	0	0	0
Queue Length 95th (ft)	6	0	29	0	22	19
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3539	1550	3245	1550	1770	2580
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.01	0.03	0.19	0.04	0.03

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	11	13	92	297	0	0	0	66	0	89
Future Volume (vph)	0	12	11	13	92	297	0	0	0	66	0	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		0.99	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3517	1550				1770		2787
Flt Permitted		1.00	1.00		0.92	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3247	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	12	11	13	92	297	0	0	0	66	0	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	86
Lane Group Flow (vph)	0	12	11	0	105	297	0	0	0	66	0	3
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free	Perm	NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free	2		Free						
Actuated Green, G (s)		3.0	20.5		2.6	20.5				6.7		0.4
Effective Green, g (s)		5.4	20.5		5.4	20.5				7.1		0.8
Actuated g/C Ratio		0.26	1.00		0.26	1.00				0.35		0.04
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		932	1550		855	1550				613		108
v/s Ratio Prot		0.00								0.04		0.00
v/s Ratio Perm			0.01		0.03	c0.19						
v/c Ratio		0.01	0.01		0.12	0.19				0.11		0.03
Uniform Delay, d1		5.6	0.0		5.7	0.0				4.5		9.5
Progression Factor		1.01	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.0		0.0	0.3				0.0		0.0
Delay (s)		5.6	0.0		5.8	0.3				4.6		9.5
Level of Service		A	A		A	A				A		A
Approach Delay (s)		2.9			1.7			0.0			7.4	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	20.5	Sum of lost time (s)	12.4
Intersection Capacity Utilization	18.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	64	10	364	48	22	23	62
v/c Ratio	0.04	0.01	0.17	0.05	0.04	0.05	0.05
Control Delay	10.0	0.0	9.0	4.2	19.3	19.3	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	0.0	9.0	4.2	19.3	19.3	2.3
Queue Length 50th (ft)	1	0	11	0	2	2	0
Queue Length 95th (ft)	21	0	90	17	30	30	7
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3503	1550	3503	1520	1519	1519	2763
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.10	0.03	0.01	0.02	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	64	10	0	364	48	45	0	62	0	0	0
Future Volume (vph)	0	64	10	0	364	48	45	0	62	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		3539	1550		3539	1548	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		3539	1550		3539	1548	1681	1681	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	64	10	0	364	48	45	0	62	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	37	0	0	0
Lane Group Flow (vph)	0	64	10	0	364	16	22	23	25	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		8.8	29.7		7.9	7.9	2.3	2.3	10.5			
Effective Green, g (s)		9.7	29.7		9.7	9.7	3.8	3.8	12.0			
Actuated g/C Ratio		0.33	1.00		0.33	0.33	0.13	0.13	0.40			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		1155	1550		1155	505	215	215	1126			
v/s Ratio Prot		0.02			c0.10		0.01	c0.01	c0.01			
v/s Ratio Perm			0.01			0.01						
v/c Ratio		0.06	0.01		0.32	0.03	0.10	0.11	0.02			
Uniform Delay, d1		6.9	0.0		7.5	6.8	11.4	11.4	5.3			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.0		0.1	0.0	0.1	0.1	0.0			
Delay (s)		6.9	0.0		7.6	6.8	11.5	11.5	5.3			
Level of Service		A	A		A	A	B	B	A			
Approach Delay (s)		5.9			7.5			7.9			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	29.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	20.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	122	2	16	65	3	41
Future Vol, veh/h	122	2	16	65	3	41
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	2	16	65	3	41
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9.2	7.2	7.6
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	7%
Vol Thru, %	20%	0%	0%	93%
Vol Right, %	80%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	122	2	44
LT Vol	0	122	0	3
Through Vol	16	0	0	41
RT Vol	65	0	2	0
Lane Flow Rate	81	122	2	44
Geometry Grp	2	7	7	2
Degree of Util (X)	0.087	0.178	0.002	0.053
Departure Headway (Hd)	3.848	5.251	4.049	4.374
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	936	681	877	823
Service Time	1.849	3.007	1.804	2.377
HCM Lane V/C Ratio	0.087	0.179	0.002	0.053
HCM Control Delay	7.2	9.2	6.8	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.6	0	0.2

Intersection	
Intersection Delay, s/veh	17.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	97	0	6	504	78	4	0	2	12	0	23
Future Vol, veh/h	1	97	0	6	504	78	4	0	2	12	0	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	97	0	6	504	78	4	0	2	12	0	23
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.6	19.1	9.1	8.8
HCM LOS	A	C	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	0%	87%	0%	0%
Vol Right, %	0%	100%	0%	0%	0%	13%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	2	1	97	6	582	12	23
LT Vol	4	0	1	0	6	0	12	0
Through Vol	0	0	0	97	0	504	0	0
RT Vol	0	2	0	0	0	78	0	23
Lane Flow Rate	4	2	1	97	6	582	12	23
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.007	0.003	0.002	0.137	0.009	0.737	0.022	0.035
Departure Headway (Hd)	6.728	5.514	5.586	5.083	5.153	4.559	6.676	5.463
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	534	651	643	708	687	786	539	658
Service Time	4.441	3.227	3.296	2.793	2.943	2.348	4.385	3.171
HCM Lane V/C Ratio	0.007	0.003	0.002	0.137	0.009	0.74	0.022	0.035
HCM Control Delay	9.5	8.2	8.3	8.6	8	19.2	9.5	8.4
HCM Lane LOS	A	A	A	A	A	C	A	A
HCM 95th-tile Q	0	0	0	0.5	0	6.7	0.1	0.1

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	44	88	0	525	775	0	0	0	107	0	26
Future Vol, veh/h	0	44	88	0	525	775	0	0	0	107	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	150	-	-	100	-	-	-	0	-	440
Veh in Median Storage, #	-	0	-	-	0	-	-	16965	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	44	88	0	525	775	0	0	0	107	0	26

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	-	-	0	569	-	525
Stage 1	-	-	-	-	-	-	525	-	-
Stage 2	-	-	-	-	-	-	44	-	-
Critical Hdwy	-	-	-	-	-	-	6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0	484	0	552
Stage 1	0	-	0	0	-	0	593	0	-
Stage 2	0	-	0	0	-	0	978	0	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	484	0	552
Mov Cap-2 Maneuver	-	-	-	-	-	-	484	0	-
Stage 1	-	-	-	-	-	-	593	0	-
Stage 2	-	-	-	-	-	-	978	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	484	552
HCM Lane V/C Ratio	-	-	0.221	0.047
HCM Control Delay (s)	-	-	14.5	11.8
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.8	0.1

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	138	4	982	106	226	523
v/c Ratio	0.11	0.00	0.80	0.07	0.65	0.33
Control Delay	4.7	0.0	15.4	0.1	33.3	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	0.0	15.4	0.1	33.3	0.6
Queue Length 50th (ft)	16	0	225	0	86	0
Queue Length 95th (ft)	42	0	#601	0	150	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	1297	1583	1283	1583	726	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.00	0.77	0.07	0.31	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	138	4	0	982	106	226	0	523	0	0	0
Future Volume (veh/h)	0	138	4	0	982	106	226	0	523	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	138	0	0	982	0	226	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	1196		0	1196		289	0				
Arrive On Green	0.00	0.64	0.00	0.00	0.64	0.00	0.16	0.00	0.00			
Sat Flow, veh/h	0	1870	1585	0	1870	1585	1781	0	1585			
Grp Volume(v), veh/h	0	138	0	0	982	0	226	0	0			
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	0.0	1.3	0.0	0.0	18.1	0.0	5.5	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	1.3	0.0	0.0	18.1	0.0	5.5	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1196		0	1196		289	0				
V/C Ratio(X)	0.00	0.12		0.00	0.82		0.78	0.00				
Avail Cap(c_a), veh/h	0	1853		0	1832		1039	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	3.2	0.0	0.0	6.2	0.0	18.3	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	1.8	0.0	1.8	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	0.0	4.0	0.0	2.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.2	0.0	0.0	8.0	0.0	20.0	0.0	0.0			
LnGrp LOS	A	A		A	A		C	A				
Approach Vol, veh/h		138	A		982	A		226	A			
Approach Delay, s/veh		3.2			8.0			20.0				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		34.6				34.6		10.9				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		44.5				* 45		26.5				
Max Q Clear Time (g_c+I1), s		20.1				3.3		7.5				
Green Ext Time (p_c), s		9.0				0.7		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			9.6									
HCM 6th LOS			A									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	0	15	0	1259	0	297	73	13	0	974	208
Future Vol, veh/h	0	0	0	15	0	1259	0	297	73	13	0	974	208
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	15	0	1259	0	297	73	13	0	974	208

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	810	-	-	-	0	-	-	-	-	0
Stage 1	297	-	-	-	-	-	-	-	-	-
Stage 2	513	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	333	0	0	0	-	0	-	0	-	0
Stage 1	753	0	0	0	-	0	-	0	-	0
Stage 2	567	0	0	0	-	0	-	0	-	0
Platoon blocked, %					-				-	
Mov Cap-1 Maneuver	333	0	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	333	0	-	-	-	-	-	-	-	-
Stage 1	753	0	-	-	-	-	-	-	-	-
Stage 2	567	0	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	333	-	-
HCM Lane V/C Ratio	-	0.045	-	-
HCM Control Delay (s)	-	16.3	0	-
HCM Lane LOS	-	C	A	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	211	59	0	148	70	921
Future Vol, veh/h	211	59	0	148	70	921
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	211	59	0	148	70	921

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	144	70	70	0	-	0
Stage 1	70	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	841	992	1530	-	-	0
Stage 1	952	-	-	-	-	0
Stage 2	941	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	841	992	1530	-	-	-
Mov Cap-2 Maneuver	841	-	-	-	-	-
Stage 1	952	-	-	-	-	-
Stage 2	941	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1530	-	841	992	-
HCM Lane V/C Ratio	-	-	0.251	0.059	-
HCM Control Delay (s)	0	-	10.7	8.9	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	1	0.2	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	6	13	7	8	32
Future Vol, veh/h	28	6	13	7	8	32
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	6	13	7	8	32
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	7.9	7.2	7.7
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	20%
Vol Thru, %	100%	0%	0%	0%	80%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	7	28	6	40
LT Vol	0	0	28	0	8
Through Vol	13	0	0	0	32
RT Vol	0	7	0	6	0
Lane Flow Rate	13	7	28	6	40
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.017	0.008	0.04	0.007	0.049
Departure Headway (Hd)	4.613	3.912	5.138	3.938	4.448
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	774	911	696	906	803
Service Time	2.354	1.653	2.877	1.676	2.487
HCM Lane V/C Ratio	0.017	0.008	0.04	0.007	0.05
HCM Control Delay	7.4	6.7	8.1	6.7	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0.1	0	0.2

Intersection							
Int Delay, s/veh	0.7						

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	5	10	2	72	6	23	70
Future Vol, veh/h	5	10	2	72	6	23	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	120	-	180	-	-	130
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	5	10	2	72	6	23	70

Major/Minor	Minor2		Major1			Major2	
Conflicting Flow All	173	23	-	93	0	-	0
Stage 1	23	-	-	-	-	-	-
Stage 2	150	-	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	2.218	-	-	-
Pot Cap-1 Maneuver	817	1054	-	1501	-	-	-
Stage 1	1000	-	-	-	-	-	-
Stage 2	878	-	-	-	-	-	-
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	817	1054	~ -38	~ -38	-	-	-
Mov Cap-2 Maneuver	817	-	-	-	-	-	-
Stage 1	1000	-	-	-	-	-	-
Stage 2	878	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7		0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	+	-	817	1054	-	-
HCM Lane V/C Ratio	-	-	0.006	0.009	-	-
HCM Control Delay (s)	-	-	9.4	8.4	-	-
HCM Lane LOS	-	-	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	15	23	19	6	7
Future Vol, veh/h	11	15	23	19	6	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	15	23	19	6	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	52	33	0	0	42	0
Stage 1	33	-	-	-	-	-
Stage 2	19	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	957	1041	-	-	1567	-
Stage 1	989	-	-	-	-	-
Stage 2	1004	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	953	1041	-	-	1567	-
Mov Cap-2 Maneuver	953	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1002	1567	-
HCM Lane V/C Ratio	-	-	0.026	0.004	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	1	1	21	0	27
Future Vol, veh/h	30	1	1	21	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	1	1	21	0	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	31	0	54	31
Stage 1	-	-	-	-	31	-
Stage 2	-	-	-	-	23	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1582	-	954	1043
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	1000	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1582	-	953	1043
Mov Cap-2 Maneuver	-	-	-	-	953	-
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	999	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1043	-	-	1582	-
HCM Lane V/C Ratio	0.026	-	-	0.001	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	54	6	5	18	0	5	11	61	0	3	0
Future Vol, veh/h	0	54	6	5	18	0	5	11	61	0	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	54	6	5	18	0	5	11	61	0	3	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.3	7	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	0%	22%	0%
Vol Thru, %	14%	90%	78%	100%
Vol Right, %	79%	10%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	60	23	3
LT Vol	5	0	5	0
Through Vol	11	54	18	3
RT Vol	61	6	0	0
Lane Flow Rate	77	60	23	3
Geometry Grp	1	1	1	1
Degree of Util (X)	0.077	0.067	0.027	0.003
Departure Headway (Hd)	3.616	4.03	4.162	4.135
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	986	889	859	860
Service Time	1.657	2.054	2.192	2.184
HCM Lane V/C Ratio	0.078	0.067	0.027	0.003
HCM Control Delay	7	7.3	7.3	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.1	0

Intersection							
Int Delay, s/veh	3.2						

Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	102	1	8	29	1	0	65
Future Vol, veh/h	102	1	8	29	1	0	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	-	None
Storage Length	-	-	195	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	102	1	8	29	1	0	65

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	103	0	0	148	103
Stage 1	-	-	-	-	0	103	-
Stage 2	-	-	-	-	0	45	-
Critical Hdwy	-	-	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1489	-	0	844	952
Stage 1	-	-	-	-	0	921	-
Stage 2	-	-	-	-	0	977	-
Platoon blocked, %	-	-		-	-		
Mov Cap-1 Maneuver	-	-	1489	-	0	840	952
Mov Cap-2 Maneuver	-	-	-	-	0	840	-
Stage 1	-	-	-	-	0	921	-
Stage 2	-	-	-	-	0	972	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	952	-	-	1489	-
HCM Lane V/C Ratio	0.068	-	-	0.005	-
HCM Control Delay (s)	9.1	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	148	23	30	79	60	12
v/c Ratio	0.10	0.01	0.02	0.05	0.10	0.02
Control Delay	7.1	0.0	7.9	0.1	4.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	0.0	7.9	0.1	4.5	0.1
Queue Length 50th (ft)	1	0	1	0	2	0
Queue Length 95th (ft)	37	0	12	0	21	0
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3539	1550	3539	1550	1770	2586
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.01	0.05	0.03	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	148	23	0	30	79	0	0	0	60	0	12
Future Volume (vph)	0	148	23	0	30	79	0	0	0	60	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	148	23	0	30	79	0	0	0	60	0	12
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	12
Lane Group Flow (vph)	0	148	23	0	30	79	0	0	0	60	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		4.4	21.9		4.0	21.9				6.7		0.3
Effective Green, g (s)		6.8	21.9		6.8	21.9				7.1		0.7
Actuated g/C Ratio		0.31	1.00		0.31	1.00				0.32		0.03
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1098	1550		1098	1550				573		89
v/s Ratio Prot		c0.04			0.01					c0.03		0.00
v/s Ratio Perm			0.01			0.05						
v/c Ratio		0.13	0.01		0.03	0.05				0.10		0.00
Uniform Delay, d1		5.4	0.0		5.3	0.0				5.2		10.3
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.0		0.0	0.1				0.0		0.0
Delay (s)		5.5	0.0		5.3	0.1				5.2		10.3
Level of Service		A	A		A	A				A		B
Approach Delay (s)		4.7			1.5			0.0			6.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	21.9	Sum of lost time (s)	12.4
Intersection Capacity Utilization	14.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	154	54	89	52	8	9	580
v/c Ratio	0.17	0.03	0.10	0.12	0.03	0.03	0.30
Control Delay	12.2	0.0	11.9	5.0	19.9	19.9	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	0.0	11.9	5.0	19.9	19.9	1.2
Queue Length 50th (ft)	9	0	5	0	1	1	0
Queue Length 95th (ft)	42	0	27	19	15	17	22
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3503	1550	3503	1520	1519	1519	2768
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.03	0.03	0.03	0.01	0.01	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	154	54	0	89	52	17	0	580	0	0	0
Future Volume (vph)	0	154	54	0	89	52	17	0	580	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		3539	1550		3539	1548	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		3539	1550		3539	1548	1681	1681	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	154	54	0	89	52	17	0	580	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	263	0	0	0
Lane Group Flow (vph)	0	154	54	0	89	11	8	9	317	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		6.1	33.1		5.2	5.2	4.6	4.6	16.6			
Effective Green, g (s)		7.0	33.1		7.0	7.0	6.1	6.1	18.1			
Actuated g/C Ratio		0.21	1.00		0.21	0.21	0.18	0.18	0.55			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		748	1550		748	327	309	309	1524			
v/s Ratio Prot		c0.04			0.03		0.00	0.01	c0.11			
v/s Ratio Perm			0.03			0.01						
v/c Ratio		0.21	0.03		0.12	0.03	0.03	0.03	0.21			
Uniform Delay, d1		10.8	0.0		10.6	10.4	11.1	11.1	3.8			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.0		0.0	0.0	0.0	0.0	0.0			
Delay (s)		10.8	0.0		10.6	10.4	11.1	11.1	3.9			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		8.0			10.5			4.1			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	33.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	1	36	3	1	107	283	4	10
Future Vol, veh/h	1	36	3	1	107	283	4	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	36	3	1	107	283	4	10
Number of Lanes	0	1	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	8.8	8.9	7.5
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	29%
Vol Thru, %	27%	0%	0%	71%
Vol Right, %	73%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	391	37	3	14
LT Vol	0	37	0	4
Through Vol	107	0	0	10
RT Vol	284	0	3	0
Lane Flow Rate	391	37	3	14
Geometry Grp	2	7	7	2
Degree of Util (X)	0.389	0.059	0.004	0.017
Departure Headway (Hd)	3.578	5.741	4.534	4.357
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	997	618	779	809
Service Time	1.635	3.53	2.322	2.449
HCM Lane V/C Ratio	0.392	0.06	0.004	0.017
HCM Control Delay	8.9	8.9	7.3	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.9	0.2	0	0.1

Intersection	
Intersection Delay, s/veh	16.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	21	482	2	1	3	390	22	4	1	0	73	0	3
Future Vol, veh/h	21	482	2	1	3	390	22	4	1	0	73	0	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	482	2	1	3	390	22	4	1	0	73	0	3
Number of Lanes	1	1	0	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	18.6	15.4	10.2	11.2
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	100%	0%	100%	0%	95%	0%	0%
Vol Right, %	0%	0%	0%	0%	0%	5%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	1	21	484	4	412	73	3
LT Vol	4	0	21	0	4	0	73	0
Through Vol	0	1	0	482	0	390	0	0
RT Vol	0	0	0	2	0	22	0	3
Lane Flow Rate	4	1	21	484	4	412	73	3
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.008	0.002	0.033	0.695	0.006	0.597	0.148	0.005
Departure Headway (Hd)	7.543	7.032	5.676	5.17	5.76	5.219	7.319	6.096
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	477	512	627	697	617	688	493	591
Service Time	5.246	4.735	3.442	2.935	3.531	2.989	5.019	3.796
HCM Lane V/C Ratio	0.008	0.002	0.033	0.694	0.006	0.599	0.148	0.005
HCM Control Delay	10.3	9.7	8.6	19	8.6	15.5	11.3	8.8
HCM Lane LOS	B	A	A	C	A	C	B	A
HCM 95th-tile Q	0	0	0.1	5.6	0	4	0.5	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	253	314	0	400	355	0	0	0	104	0	22
Future Vol, veh/h	0	253	314	0	400	355	0	0	0	104	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	150	-	-	100	-	-	-	0	-	440
Veh in Median Storage, #	-	0	-	-	0	-	-	16965	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	253	314	0	400	355	0	0	0	104	0	22

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	-	-	0				653	-	400
Stage 1	-	-	-	-	-	-				400	-	-
Stage 2	-	-	-	-	-	-				253	-	-
Critical Hdwy	-	-	-	-	-	-				6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-				3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0				432	0	650
Stage 1	0	-	0	0	-	0				677	0	-
Stage 2	0	-	0	0	-	0				789	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	-	-	-				432	0	650
Mov Cap-2 Maneuver	-	-	-	-	-	-				432	0	-
Stage 1	-	-	-	-	-	-				677	0	-
Stage 2	-	-	-	-	-	-				789	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	432	650
HCM Lane V/C Ratio	-	-	0.241	0.034
HCM Control Delay (s)	-	-	16	10.7
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.9	0.1

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	333	50	459	137	257	883
v/c Ratio	0.37	0.03	0.52	0.09	0.52	0.56
Control Delay	7.9	0.0	9.9	0.1	15.8	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	0.0	9.9	0.1	15.8	1.4
Queue Length 50th (ft)	33	0	53	0	35	0
Queue Length 95th (ft)	94	0	141	0	110	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	1832	1583	1829	1583	1313	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.03	0.25	0.09	0.20	0.56

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	333	50	0	459	137	257	0	883	0	0	0
Future Volume (veh/h)	0	333	50	0	459	137	257	0	883	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	333	0	0	459	0	257	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	754		0	754		417	0				
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.00	0.23	0.00	0.00			
Sat Flow, veh/h	0	1870	1585	0	1870	1585	1781	0	1585			
Grp Volume(v), veh/h	0	333	0	0	459	0	257	0	0			
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	0.0	3.2	0.0	0.0	4.8	0.0	3.2	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	3.2	0.0	0.0	4.8	0.0	3.2	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	754		0	754		417	0				
V/C Ratio(X)	0.00	0.44		0.00	0.61		0.62	0.00				
Avail Cap(c_a), veh/h	0	3391		0	3353		1902	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	5.4	0.0	0.0	5.9	0.0	8.5	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.8	0.0	0.6	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.6	0.0	0.0	0.9	0.0	0.8	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.7	0.0	0.0	6.7	0.0	9.1	0.0	0.0			
LnGrp LOS	A	A		A	A		A	A				
Approach Vol, veh/h		333	A		459	A		257	A			
Approach Delay, s/veh		5.7			6.7			9.1				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		15.5				15.5		9.3				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		44.5				* 45		26.5				
Max Q Clear Time (g_c+I1), s		6.8				5.2		5.2				
Green Ext Time (p_c), s		3.2				1.8		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			6.9									
HCM 6th LOS			A									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	13	0	1170	4	0	319	60	7	0	1708	333
Future Vol, veh/h	0	0	0	13	0	1170	4	0	319	60	7	0	1708	333
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	-	Free	-	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	-	0	-	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	0	1170	4	0	319	60	7	0	1708	333

Major/Minor	Minor1			Major1				Major2			
Conflicting Flow All	1187	-	-	1708	-	0	-	-	-	-	0
Stage 1	319	-	-	-	-	-	-	-	-	-	-
Stage 2	868	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	6.93	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	3.119	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	194	0	0	83	0	-	0	-	0	-	0
Stage 1	736	0	0	-	0	-	0	-	0	-	0
Stage 2	372	0	0	-	0	-	0	-	0	-	0
Platoon blocked, %						-				-	
Mov Cap-1 Maneuver	183	0	-	83	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	183	0	-	-	-	-	-	-	-	-	-
Stage 1	693	0	-	-	-	-	-	-	-	-	-
Stage 2	372	0	-	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.2	0.6	
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	183	-	-
HCM Lane V/C Ratio	-	0.071	-	-
HCM Control Delay (s)	-	26.2	0	-
HCM Lane LOS	-	D	A	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection	
Int Delay, s/veh	16.9

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	221	585	10	160	10	353	1392
Future Vol, veh/h	221	585	10	160	10	353	1392
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	Free
Storage Length	0	30	-	-	-	-	290
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	221	585	10	160	10	353	1392

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	453	353	353	0	160	-	0
Stage 1	353	-	-	-	-	-	-
Stage 2	100	-	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	6.93	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	3.119	-	-
Pot Cap-1 Maneuver	550	690	1204	-	908	-	0
Stage 1	710	-	-	-	-	-	0
Stage 2	913	-	-	-	-	-	0
Platoon blocked, %				-		-	
Mov Cap-1 Maneuver	537	690	1204	-	908	-	-
Mov Cap-2 Maneuver	537	-	-	-	-	-	-
Stage 1	704	-	-	-	-	-	-
Stage 2	900	-	-	-	-	-	-

Approach	EB		NB		SB
HCM Control Delay, s	27.8		0.5		0.2
HCM LOS	D				

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1204	-	537	690	-
HCM Lane V/C Ratio	0.008	-	0.412	0.848	-
HCM Control Delay (s)	8	0	16.3	32.2	-
HCM Lane LOS	A	A	C	D	-
HCM 95th %tile Q(veh)	0	-	2	9.6	-

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	2	86	30	8	9
Future Vol, veh/h	6	2	86	30	8	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	2	86	30	8	9
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	7.8	7.5	7.7
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	47%
Vol Thru, %	100%	0%	0%	0%	53%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	86	30	6	2	17
LT Vol	0	0	6	0	8
Through Vol	86	0	0	0	9
RT Vol	0	30	0	2	0
Lane Flow Rate	86	30	6	2	17
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.109	0.032	0.009	0.002	0.021
Departure Headway (Hd)	4.556	3.856	5.26	4.058	4.525
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	789	931	674	870	789
Service Time	2.267	1.567	3.042	1.84	2.563
HCM Lane V/C Ratio	0.109	0.032	0.009	0.002	0.022
HCM Control Delay	7.8	6.7	8.1	6.8	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0	0.1

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	50	73	1	22	22	3	20
Future Vol, veh/h	50	73	1	22	22	3	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	120	-	180	-	-	130
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	50	73	1	22	22	3	20

Major/Minor	Minor2		Major1			Major2	
Conflicting Flow All	69	3	-	23	0	-	0
Stage 1	3	-	-	-	-	-	-
Stage 2	66	-	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	2.218	-	-	-
Pot Cap-1 Maneuver	936	1081	-	1592	-	-	-
Stage 1	1020	-	-	-	-	-	-
Stage 2	957	-	-	-	-	-	-
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	936	1081	~ -23	~ -23	-	-	-
Mov Cap-2 Maneuver	936	-	-	-	-	-	-
Stage 1	1020	-	-	-	-	-	-
Stage 2	957	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8		0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	+	-	936	1081	-	-
HCM Lane V/C Ratio	-	-	0.053	0.068	-	-
HCM Control Delay (s)	-	-	9.1	8.6	-	-
HCM Lane LOS	-	-	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	122	10	16	65	3	41
Future Vol, veh/h	122	10	16	65	3	41
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	10	16	65	3	41
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9	7.2	7.6
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	7%
Vol Thru, %	20%	0%	0%	93%
Vol Right, %	80%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	122	10	44
LT Vol	0	122	0	3
Through Vol	16	0	0	41
RT Vol	65	0	10	0
Lane Flow Rate	81	122	10	44
Geometry Grp	2	7	7	2
Degree of Util (X)	0.087	0.178	0.011	0.054
Departure Headway (Hd)	3.863	5.251	4.049	4.389
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	932	680	877	820
Service Time	1.865	3.009	1.806	2.392
HCM Lane V/C Ratio	0.087	0.179	0.011	0.054
HCM Control Delay	7.2	9.2	6.9	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.6	0	0.2

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	97	10	6	504	78	4	10	2	12	10	23
Future Vol, veh/h	1	97	10	6	504	78	4	10	2	12	10	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	97	10	6	504	78	4	10	2	12	10	23
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.7	20.7	9.2	9
HCM LOS	A	C	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	83%	0%	91%	0%	87%	0%	30%
Vol Right, %	0%	17%	0%	9%	0%	13%	0%	70%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	12	1	107	6	582	12	33
LT Vol	4	0	1	0	6	0	12	0
Through Vol	0	10	0	97	0	504	0	10
RT Vol	0	2	0	10	0	78	0	23
Lane Flow Rate	4	12	1	107	6	582	12	33
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.008	0.021	0.002	0.152	0.009	0.761	0.022	0.053
Departure Headway (Hd)	6.781	6.157	5.669	5.1	5.303	4.708	6.729	5.73
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	527	580	631	703	676	768	532	624
Service Time	4.531	3.907	3.401	2.832	3.025	2.43	4.474	3.475
HCM Lane V/C Ratio	0.008	0.021	0.002	0.152	0.009	0.758	0.023	0.053
HCM Control Delay	9.6	9	8.4	8.7	8.1	20.8	9.6	8.8
HCM Lane LOS	A	A	A	A	A	C	A	A
HCM 95th-tile Q	0	0.1	0	0.5	0	7.2	0.1	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	44	88	0	525	775	0	0	0	107	0	26
Future Vol, veh/h	0	44	88	0	525	775	0	0	0	107	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	150	-	-	100	-	-	-	0	-	440
Veh in Median Storage, #	-	0	-	-	0	-	-	16965	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	44	88	0	525	775	0	0	0	107	0	26

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	-	-	0				569	-	525
Stage 1	-	-	-	-	-	-				525	-	-
Stage 2	-	-	-	-	-	-				44	-	-
Critical Hdwy	-	-	-	-	-	-				6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-				3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0				484	0	552
Stage 1	0	-	0	0	-	0				593	0	-
Stage 2	0	-	0	0	-	0				978	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	-	-	-				484	0	552
Mov Cap-2 Maneuver	-	-	-	-	-	-				484	0	-
Stage 1	-	-	-	-	-	-				593	0	-
Stage 2	-	-	-	-	-	-				978	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	484	552
HCM Lane V/C Ratio	-	-	0.221	0.047
HCM Control Delay (s)	-	-	14.5	11.8
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.8	0.1

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	138	4	1072	106	226	553
v/c Ratio	0.11	0.00	0.82	0.07	0.71	0.35
Control Delay	4.2	0.0	15.6	0.1	38.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	0.0	15.6	0.1	38.6	0.6
Queue Length 50th (ft)	15	0	248	0	86	0
Queue Length 95th (ft)	40	0	#674	0	151	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	1313	1550	1313	1583	658	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.00	0.82	0.07	0.34	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	138	4	0	1072	106	226	0	553	0	0	0
Future Volume (veh/h)	0	138	4	0	1072	106	226	0	553	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	138	0	0	1072	0	226	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	1267		0	1285		270	0				
Arrive On Green	0.00	0.68	0.00	0.00	0.69	0.00	0.15	0.00	0.00			
Sat Flow, veh/h	0	1870	1585	0	1870	1585	1781	0	1585			
Grp Volume(v), veh/h	0	138	0	0	1072	0	226	0	0			
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	0.0	1.3	0.0	0.0	20.9	0.0	6.1	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	1.3	0.0	0.0	20.9	0.0	6.1	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1267		0	1285		270	0				
V/C Ratio(X)	0.00	0.11		0.00	0.83		0.84	0.00				
Avail Cap(c_a), veh/h	0	1731		0	1731		932	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	2.8	0.0	0.0	5.7	0.0	20.5	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	2.7	0.0	2.6	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	4.6	0.0	2.5	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	2.8	0.0	0.0	8.4	0.0	23.1	0.0	0.0			
LnGrp LOS	A	A		A	A		C	A				
Approach Vol, veh/h		138	A		1072	A		226	A			
Approach Delay, s/veh		2.8			8.4			23.1				
Approach LOS		A			A			C				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		38.2				38.2		11.5				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		44.5				* 45		26.5				
Max Q Clear Time (g_c+I1), s		22.9				3.3		8.1				
Green Ext Time (p_c), s		9.8				0.7		0.3				

Intersection Summary			
HCM 6th Ctrl Delay			10.2
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	0	15	0	3039	0	717	73	13	0	1994	508
Future Vol, veh/h	0	0	0	15	0	3039	0	717	73	13	0	1994	508
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	15	0	3039	0	717	73	13	0	1994	508

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	1740	-	-	-	0	-	-	-	-	0
Stage 1	717	-	-	-	-	-	-	-	-	-
Stage 2	1023	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	86	0	0	0	-	0	-	0	-	0
Stage 1	483	0	0	0	-	0	-	0	-	0
Stage 2	309	0	0	0	-	0	-	0	-	0
Platoon blocked, %					-				-	
Mov Cap-1 Maneuver	86	0	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	86	0	-	-	-	-	-	-	-	-
Stage 1	483	0	-	-	-	-	-	-	-	-
Stage 2	309	0	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	55.5	0	
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	86	-	-
HCM Lane V/C Ratio	-	0.174	-	-
HCM Control Delay (s)	-	55.5	0	-
HCM Lane LOS	-	F	A	-
HCM 95th %tile Q(veh)	-	0.6	-	-

Intersection						
Int Delay, s/veh	15					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	621	59	0	158	80	1941
Future Vol, veh/h	621	59	0	158	80	1941
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	621	59	0	158	80	1941

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	159	80	80	0	-	0
Stage 1	80	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	824	980	1517	-	-	0
Stage 1	943	-	-	-	-	0
Stage 2	935	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	824	980	1517	-	-	-
Mov Cap-2 Maneuver	824	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	935	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1517	-	824	980	-
HCM Lane V/C Ratio	-	-	0.754	0.06	-
HCM Control Delay (s)	0	-	21.4	8.9	-
HCM Lane LOS	A	-	C	A	-
HCM 95th %tile Q(veh)	0	-	7.2	0.2	-

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	1	36	10	1	117	283	10	20
Future Vol, veh/h	1	36	10	1	117	283	10	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	36	10	1	117	283	10	20
Number of Lanes	0	1	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	8.7	9.1	7.7
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	33%
Vol Thru, %	29%	0%	0%	67%
Vol Right, %	71%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	401	37	10	30
LT Vol	0	37	0	10
Through Vol	117	0	0	20
RT Vol	284	0	10	0
Lane Flow Rate	401	37	10	30
Geometry Grp	2	7	7	2
Degree of Util (X)	0.402	0.061	0.013	0.037
Departure Headway (Hd)	3.613	5.889	4.681	4.487
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	982	612	769	802
Service Time	1.684	3.589	2.381	2.492
HCM Lane V/C Ratio	0.408	0.06	0.013	0.037
HCM Control Delay	9.1	9	7.4	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	2	0.2	0	0.1

Intersection	
Intersection Delay, s/veh	17
Intersection LOS	C

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	21	482	2	1	3	390	22	4	1	10	73	10	3
Future Vol, veh/h	21	482	2	1	3	390	22	4	1	10	73	10	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	482	2	1	3	390	22	4	1	10	73	10	3
Number of Lanes	1	1	0	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	19.2	15.9	9.6	11.1
HCM LOS	C	C	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	9%	0%	100%	0%	95%	0%	77%
Vol Right, %	0%	91%	0%	0%	0%	5%	0%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	11	21	484	4	412	73	13
LT Vol	4	0	21	0	4	0	73	0
Through Vol	0	1	0	482	0	390	0	10
RT Vol	0	10	0	2	0	22	0	3
Lane Flow Rate	4	11	21	484	4	412	73	13
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.008	0.02	0.034	0.705	0.006	0.606	0.15	0.024
Departure Headway (Hd)	7.603	6.441	5.749	5.242	5.836	5.295	7.375	6.701
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	473	559	617	682	607	676	489	537
Service Time	5.308	4.146	3.534	3.027	3.627	3.085	5.077	4.403
HCM Lane V/C Ratio	0.008	0.02	0.034	0.71	0.007	0.609	0.149	0.024
HCM Control Delay	10.4	9.3	8.7	19.7	8.7	16	11.4	9.6
HCM Lane LOS	B	A	A	C	A	C	B	A
HCM 95th-tile Q	0	0.1	0.1	5.8	0	4.1	0.5	0.1

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	253	314	0	400	355	0	0	0	104	0	22
Future Vol, veh/h	0	253	314	0	400	355	0	0	0	104	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	150	-	-	100	-	-	-	0	-	440
Veh in Median Storage, #	-	0	-	-	0	-	-	16965	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	253	314	0	400	355	0	0	0	104	0	22

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	-	-	0	653	-	400
Stage 1	-	-	-	-	-	-	400	-	-
Stage 2	-	-	-	-	-	-	253	-	-
Critical Hdwy	-	-	-	-	-	-	6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0	432	0	650
Stage 1	0	-	0	0	-	0	677	0	-
Stage 2	0	-	0	0	-	0	789	0	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	432	0	650
Mov Cap-2 Maneuver	-	-	-	-	-	-	432	0	-
Stage 1	-	-	-	-	-	-	677	0	-
Stage 2	-	-	-	-	-	-	789	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	432	650
HCM Lane V/C Ratio	-	-	0.241	0.034
HCM Control Delay (s)	-	-	16	10.7
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.9	0.1

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	333	50	479	137	257	933
v/c Ratio	0.34	0.03	0.49	0.09	0.56	0.60
Control Delay	7.0	0.0	8.5	0.1	17.5	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	0.0	8.5	0.1	17.5	1.7
Queue Length 50th (ft)	32	0	50	0	39	0
Queue Length 95th (ft)	90	0	139	0	114	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	1831	1550	1831	1583	1255	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.03	0.26	0.09	0.20	0.60

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	333	50	0	479	137	257	0	933	0	0	0
Future Volume (veh/h)	0	333	50	0	479	137	257	0	933	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	333	0	0	479	0	257	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	829		0	867		381	0				
Arrive On Green	0.00	0.44	0.00	0.00	0.46	0.00	0.21	0.00	0.00			
Sat Flow, veh/h	0	1870	1585	0	1870	1585	1781	0	1585			
Grp Volume(v), veh/h	0	333	0	0	479	0	257	0	0			
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	0.0	3.0	0.0	0.0	4.6	0.0	3.3	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	3.0	0.0	0.0	4.6	0.0	3.3	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	829		0	867		381	0				
V/C Ratio(X)	0.00	0.40		0.00	0.55		0.67	0.00				
Avail Cap(c_a), veh/h	0	3467		0	3467		1867	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	4.7	0.0	0.0	4.8	0.0	9.0	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.6	0.0	0.8	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.0	0.0	0.7	0.0	0.8	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	4.9	0.0	0.0	5.4	0.0	9.7	0.0	0.0			
LnGrp LOS	A	A		A	A		A	A				
Approach Vol, veh/h		333	A		479	A		257	A			
Approach Delay, s/veh		4.9			5.4			9.7				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		15.5				15.5		9.3				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		44.5				* 45		26.5				
Max Q Clear Time (g_c+I1), s		6.6				5.0		5.3				
Green Ext Time (p_c), s		3.4				1.8		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			6.3									
HCM 6th LOS			A									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	0	13	0	2230	0	669	60	7	0	3188	733
Future Vol, veh/h	0	0	0	13	0	2230	0	669	60	7	0	3188	733
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	0	2230	0	669	60	7	0	3188	733

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	2277	-	-	-	0	-	-	-	-	0
Stage 1	669	-	-	-	-	-	-	-	-	-
Stage 2	1608	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	39	0	0	0	-	0	-	0	-	0
Stage 1	508	0	0	0	-	0	-	0	-	0
Stage 2	150	0	0	0	-	0	-	0	-	0
Platoon blocked, %					-				-	
Mov Cap-1 Maneuver	39	0	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	39	0	-	-	-	-	-	-	-	-
Stage 1	508	0	-	-	-	-	-	-	-	-
Stage 2	150	0	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	138	0	
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	39	-	-
HCM Lane V/C Ratio	-	0.333	-	-
HCM Control Delay (s)	-	138	0	-
HCM Lane LOS	-	F	A	-
HCM 95th %tile Q(veh)	-	1.1	-	-

Intersection							
Int Delay, s/veh	40.2						

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	561	585	10	170	10	363	2872
Future Vol, veh/h	561	585	10	170	10	363	2872
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	Free
Storage Length	0	30	-	-	-	-	290
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	561	585	10	170	10	363	2872

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	468	363	363	0	170	-	0
Stage 1	363	-	-	-	-	-	-
Stage 2	105	-	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	6.93	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	3.119	-	-
Pot Cap-1 Maneuver	~ 538	681	1194	-	895	-	0
Stage 1	703	-	-	-	-	-	0
Stage 2	908	-	-	-	-	-	0
Platoon blocked, %				-		-	
Mov Cap-1 Maneuver	~ 526	681	1194	-	895	-	-
Mov Cap-2 Maneuver	~ 526	-	-	-	-	-	-
Stage 1	697	-	-	-	-	-	-
Stage 2	895	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	59.4	0.4	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1194	-	526	681	-
HCM Lane V/C Ratio	0.008	-	1.067	0.859	-
HCM Control Delay (s)	8	0	86.1	33.8	-
HCM Lane LOS	A	A	F	D	-
HCM 95th %tile Q(veh)	0	-	16.9	10	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	5.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	10	10	10	10
Future Vol, veh/h	30	10	10	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	10	10	10	10	10

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	45	15	0	0	20	0
Stage 1	15	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	965	1065	-	-	1596	-
Stage 1	1008	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	959	1065	-	-	1596	-
Mov Cap-2 Maneuver	959	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	987	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	3.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	983	1596	-
HCM Lane V/C Ratio	-	-	0.041	0.006	-
HCM Control Delay (s)	-	-	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	8.2					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	10	390	20	10	200
Future Vol, veh/h	10	10	390	20	10	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	4	2	2	4
Mvmt Flow	10	10	390	20	10	200

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	20	0	815	15
Stage 1	-	-	-	-	15	-
Stage 2	-	-	-	-	800	-
Critical Hdwy	-	-	4.14	-	6.42	6.24
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.336
Pot Cap-1 Maneuver	-	-	1583	-	347	1059
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	442	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1583	-	261	1059
Mov Cap-2 Maneuver	-	-	-	-	261	-
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	332	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.6	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	924	-	-	1583	-
HCM Lane V/C Ratio	0.227	-	-	0.246	-
HCM Control Delay (s)	10	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	1	-

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	10	150	30	40	330	10	30	10	10	10	10	10
Future Vol, veh/h	10	150	30	40	330	10	30	10	10	10	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	150	30	40	330	10	30	10	10	10	10	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	11	8.7	8.4
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	5%	11%	33%
Vol Thru, %	20%	79%	87%	33%
Vol Right, %	20%	16%	3%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	190	380	30
LT Vol	30	10	40	10
Through Vol	10	150	330	10
RT Vol	10	30	10	10
Lane Flow Rate	50	190	380	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.073	0.235	0.459	0.043
Departure Headway (Hd)	5.231	4.453	4.349	5.13
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	684	806	828	696
Service Time	3.273	2.481	2.373	3.176
HCM Lane V/C Ratio	0.073	0.236	0.459	0.043
HCM Control Delay	8.7	8.9	11	8.4
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.2	0.9	2.4	0.1

Intersection						
Int Delay, s/veh	1.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	150	0	100	350	10	10
Future Vol, veh/h	150	0	100	350	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	195	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	0	100	350	10	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	150	0	700	150
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	550	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1431	-	405	896
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	578	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1431	-	377	896
Mov Cap-2 Maneuver	-	-	-	-	377	-
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	538	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	531	-	-	1431	-
HCM Lane V/C Ratio	0.038	-	-	0.07	-
HCM Control Delay (s)	12	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	60	50	350	300	70	110
v/c Ratio	0.03	0.03	0.18	0.19	0.11	0.16
Control Delay	8.5	0.0	7.6	0.3	6.1	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	0.0	7.6	0.3	6.1	6.0
Queue Length 50th (ft)	1	0	8	0	5	0
Queue Length 95th (ft)	19	0	82	0	23	21
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3539	1550	3539	1550	1770	2580
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.10	0.19	0.04	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	60	50	0	350	300	0	0	0	70	0	110
Future Volume (vph)	0	60	50	0	350	300	0	0	0	70	0	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	60	50	0	350	300	0	0	0	70	0	110
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	100
Lane Group Flow (vph)	0	60	50	0	350	300	0	0	0	70	0	10
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		8.7	28.0		8.3	28.0				8.5		2.1
Effective Green, g (s)		11.1	28.0		11.1	28.0				8.9		2.5
Actuated g/C Ratio		0.40	1.00		0.40	1.00				0.32		0.09
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1402	1550		1402	1550				562		248
v/s Ratio Prot		0.02			0.10					0.04		0.00
v/s Ratio Perm			0.03			c0.19						
v/c Ratio		0.04	0.03		0.25	0.19				0.12		0.04
Uniform Delay, d1		5.2	0.0		5.7	0.0				6.8		11.7
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.0		0.0	0.3				0.0		0.0
Delay (s)		5.2	0.0		5.7	0.3				6.8		11.7
Level of Service		A	A		A	A				A		B
Approach Delay (s)		2.9			3.2			0.0			9.8	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	28.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	80	30	390	50	120	130	70
v/c Ratio	0.07	0.02	0.35	0.09	0.29	0.31	0.06
Control Delay	12.9	0.0	13.3	5.2	19.3	19.5	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	0.0	13.3	5.2	19.3	19.5	2.1
Queue Length 50th (ft)	5	0	30	0	20	21	0
Queue Length 95th (ft)	28	0	111	20	104	111	7
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3443	1550	3443	1495	1495	1505	2716
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.11	0.03	0.08	0.09	0.03

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	80	30	0	390	50	240	10	70	0	0	0
Future Volume (vph)	0	80	30	0	390	50	240	10	70	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1550		3539	1547	1681	1692	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1550		3539	1547	1681	1692	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	80	30	0	390	50	240	10	70	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	35	0	0	36	0	0	0
Lane Group Flow (vph)	0	80	30	0	390	15	120	130	34	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		11.1	38.8		10.2	10.2	7.7	7.7	17.3			
Effective Green, g (s)		12.0	38.8		12.0	12.0	9.2	9.2	18.8			
Actuated g/C Ratio		0.31	1.00		0.31	0.31	0.24	0.24	0.48			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		1094	1550		1094	478	398	401	1350			
v/s Ratio Prot		0.02			c0.11		0.07	c0.08	0.01			
v/s Ratio Perm			c0.02			0.01						
v/c Ratio		0.07	0.02		0.36	0.03	0.30	0.32	0.03			
Uniform Delay, d1		9.5	0.0		10.4	9.3	12.2	12.2	5.2			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.0		0.1	0.0	0.2	0.2	0.0			
Delay (s)		9.5	0.0		10.5	9.4	12.3	12.4	5.2			
Level of Service		A	A		B	A	B	B	A			
Approach Delay (s)		6.9			10.3			10.8			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	38.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	19.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	100	10	10	510	80	10	10	10	20	10	30
Future Vol, veh/h	10	100	10	10	510	80	10	10	10	20	10	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	100	10	10	510	80	10	10	10	20	10	30
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	9	22.8	9.3	9.2
HCM LOS	A	C	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	50%	0%	91%	0%	86%	0%	25%
Vol Right, %	0%	50%	0%	9%	0%	14%	0%	75%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	20	10	110	10	590	20	40
LT Vol	10	0	10	0	10	0	20	0
Through Vol	0	10	0	100	0	510	0	10
RT Vol	0	10	0	10	0	80	0	30
Lane Flow Rate	10	20	10	110	10	590	20	40
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.019	0.033	0.016	0.16	0.015	0.788	0.038	0.064
Departure Headway (Hd)	6.879	6.017	5.795	5.228	5.405	4.808	6.822	5.784
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	518	591	616	684	662	755	523	616
Service Time	4.652	3.79	3.545	2.977	3.139	2.542	4.589	3.55
HCM Lane V/C Ratio	0.019	0.034	0.016	0.161	0.015	0.781	0.038	0.065
HCM Control Delay	9.8	9	8.6	9	8.2	23	9.9	8.9
HCM Lane LOS	A	A	A	A	A	C	A	A
HCM 95th-tile Q	0.1	0.1	0	0.6	0	7.9	0.1	0.2

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	40	10	10	60
Future Vol, veh/h	30	10	40	10	10	60
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	10	40	10	10	60
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	8	7.4	8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	14%
Vol Thru, %	100%	0%	0%	0%	86%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	10	30	10	70
LT Vol	0	0	30	0	10
Through Vol	40	0	0	0	60
RT Vol	0	10	0	10	0
Lane Flow Rate	40	10	30	10	70
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.052	0.011	0.044	0.011	0.087
Departure Headway (Hd)	4.639	3.938	5.239	4.038	4.47
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	768	902	677	874	797
Service Time	2.391	1.69	3.021	1.819	2.523
HCM Lane V/C Ratio	0.052	0.011	0.044	0.011	0.088
HCM Control Delay	7.6	6.7	8.3	6.9	8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0	0.3

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	80	10	30	70
Future Vol, veh/h	10	10	80	10	30	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	120	180	-	-	130
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	80	10	30	70

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	200	30	100	0	-	0
Stage 1	30	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	789	1044	1493	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	746	1044	1493	-	-	-
Mov Cap-2 Maneuver	746	-	-	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	6.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1493	-	746	1044	-	-
HCM Lane V/C Ratio	0.054	-	0.013	0.01	-	-
HCM Control Delay (s)	7.5	-	9.9	8.5	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0	0	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	30	30	10	10
Future Vol, veh/h	20	20	30	30	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	20	30	30	10	10

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	75	45	0	0	60	0
Stage 1	45	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	928	1025	-	-	1544	-
Stage 1	977	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	922	1025	-	-	1544	-
Mov Cap-2 Maneuver	922	-	-	-	-	-
Stage 1	977	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	971	1544	-
HCM Lane V/C Ratio	-	-	0.041	0.006	-
HCM Control Delay (s)	-	-	8.9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	7.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	130	30	10	280
Future Vol, veh/h	30	10	130	30	10	280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	4	2	2	4
Mvmt Flow	30	10	130	30	10	280

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	40	0	325	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	290	-
Critical Hdwy	-	-	4.14	-	6.42	6.24
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.336
Pot Cap-1 Maneuver	-	-	1557	-	669	1032
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	759	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1557	-	612	1032
Mov Cap-2 Maneuver	-	-	-	-	612	-
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.1	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1008	-	-	1557	-
HCM Lane V/C Ratio	0.288	-	-	0.083	-
HCM Control Delay (s)	10	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.3	-

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	250	30	10	110	10	20	20	70	10	10	10
Future Vol, veh/h	10	250	30	10	110	10	20	20	70	10	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	250	30	10	110	10	20	20	70	10	10	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.5	8.3	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	18%	3%	8%	33%
Vol Thru, %	18%	86%	85%	33%
Vol Right, %	64%	10%	8%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	290	130	30
LT Vol	20	10	10	10
Through Vol	20	250	110	10
RT Vol	70	30	10	10
Lane Flow Rate	110	290	130	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.14	0.351	0.164	0.041
Departure Headway (Hd)	4.567	4.352	4.543	4.884
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	784	826	789	731
Service Time	2.601	2.38	2.576	2.925
HCM Lane V/C Ratio	0.14	0.351	0.165	0.041
HCM Control Delay	8.3	9.7	8.5	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	1.6	0.6	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	300	10	10	120	10	70
Future Vol, veh/h	300	10	10	120	10	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	195	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	10	10	120	10	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	310	0	445	305
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	140	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1250	-	571	735
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	887	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1250	-	566	735
Mov Cap-2 Maneuver	-	-	-	-	566	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	880	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	709	-	-	1250	-
HCM Lane V/C Ratio	0.113	-	-	0.008	-
HCM Control Delay (s)	10.7	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	210	160	110	80	60	30
v/c Ratio	0.09	0.10	0.05	0.05	0.08	0.04
Control Delay	5.8	0.1	6.1	0.1	3.9	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	0.1	6.1	0.1	3.9	2.8
Queue Length 50th (ft)	0	0	0	0	0	0
Queue Length 95th (ft)	50	0	29	0	21	4
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3539	1550	3539	1550	1770	2586
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.10	0.03	0.05	0.03	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	210	160	0	110	80	0	0	0	60	0	30
Future Volume (vph)	0	210	160	0	110	80	0	0	0	60	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	210	160	0	110	80	0	0	0	60	0	30
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	29
Lane Group Flow (vph)	0	210	160	0	110	80	0	0	0	60	0	1
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		6.4	23.7		6.0	23.7				6.5		0.3
Effective Green, g (s)		8.8	23.7		8.8	23.7				6.9		0.7
Actuated g/C Ratio		0.37	1.00		0.37	1.00				0.29		0.03
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1314	1550		1314	1550				515		82
v/s Ratio Prot		c0.06			0.03					0.03		0.00
v/s Ratio Perm			c0.10			0.05						
v/c Ratio		0.16	0.10		0.08	0.05				0.12		0.01
Uniform Delay, d1		5.0	0.0		4.8	0.0				6.2		11.2
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.1		0.0	0.1				0.0		0.0
Delay (s)		5.0	0.1		4.8	0.1				6.2		11.2
Level of Service		A	A		A	A				A		B
Approach Delay (s)		2.9			2.8			0.0			7.9	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	23.7	Sum of lost time (s)	12.4
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	200	70	100	60	40	50	580
v/c Ratio	0.24	0.05	0.12	0.15	0.13	0.16	0.33
Control Delay	13.3	0.1	12.8	5.9	18.9	18.9	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	0.1	12.8	5.9	18.9	18.9	1.3
Queue Length 50th (ft)	13	0	6	0	5	6	0
Queue Length 95th (ft)	55	0	31	23	45	52	21
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3478	1550	3478	1510	1512	1531	2752
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.05	0.03	0.04	0.03	0.03	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	200	70	0	100	60	80	10	580	0	0	0
Future Volume (vph)	0	200	70	0	100	60	80	10	580	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1550		3539	1548	1681	1702	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1550		3539	1548	1681	1702	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	200	70	0	100	60	80	10	580	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	45	0	0	273	0	0	0
Lane Group Flow (vph)	0	200	70	0	100	15	40	50	307	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		7.7	35.3		6.8	6.8	5.4	5.4	17.2			
Effective Green, g (s)		8.6	35.3		8.6	8.6	6.9	6.9	18.7			
Actuated g/C Ratio		0.24	1.00		0.24	0.24	0.20	0.20	0.53			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		862	1550		862	377	328	332	1476			
v/s Ratio Prot		c0.06			0.03		0.02	0.03	c0.11			
v/s Ratio Perm			0.05			0.01						
v/c Ratio		0.23	0.05		0.12	0.04	0.12	0.15	0.21			
Uniform Delay, d1		10.7	0.0		10.4	10.2	11.7	11.8	4.4			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.1		0.0	0.0	0.1	0.1	0.0			
Delay (s)		10.8	0.1		10.4	10.2	11.8	11.8	4.4			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		8.0			10.3			5.4			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	35.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	19.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	490	10	10	390	30	10	10	10	80	10	10
Future Vol, veh/h	30	490	10	10	390	30	10	10	10	80	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	490	10	10	390	30	10	10	10	80	10	10
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	22.6	17.7	10.2	11.4
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	50%	0%	98%	0%	93%	0%	50%
Vol Right, %	0%	50%	0%	2%	0%	7%	0%	50%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	20	30	500	10	420	80	20
LT Vol	10	0	30	0	10	0	80	0
Through Vol	0	10	0	490	0	390	0	10
RT Vol	0	10	0	10	0	30	0	10
Lane Flow Rate	10	20	30	500	10	420	80	20
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.022	0.038	0.05	0.76	0.017	0.647	0.168	0.037
Departure Headway (Hd)	7.778	6.907	5.989	5.47	6.098	5.543	7.548	6.679
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	460	518	599	665	588	651	475	536
Service Time	5.531	4.66	3.714	3.195	3.826	3.271	5.293	4.425
HCM Lane V/C Ratio	0.022	0.039	0.05	0.752	0.017	0.645	0.168	0.037
HCM Control Delay	10.7	9.9	9	23.4	8.9	17.9	11.8	9.7
HCM Lane LOS	B	A	A	C	A	C	B	A
HCM 95th-tile Q	0.1	0.1	0.2	7	0.1	4.7	0.6	0.1

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	10	110	30	10	30
Future Vol, veh/h	10	10	110	30	10	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	110	30	10	30
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	7.6	7.8	7.8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	25%
Vol Thru, %	100%	0%	0%	0%	75%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	30	10	10	40
LT Vol	0	0	10	0	10
Through Vol	110	0	0	0	30
RT Vol	0	30	0	10	0
Lane Flow Rate	110	30	10	10	40
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.14	0.032	0.015	0.012	0.05
Departure Headway (Hd)	4.589	3.889	5.454	4.251	4.521
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	782	920	660	847	787
Service Time	2.314	1.614	3.154	1.951	2.577
HCM Lane V/C Ratio	0.141	0.033	0.015	0.012	0.051
HCM Control Delay	8.1	6.7	8.2	7	7.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.5	0.1	0	0	0.2

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	80	30	30	10	20
Future Vol, veh/h	50	80	30	30	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	120	180	-	-	130
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	80	30	30	10	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	100	10	30	0	-	0
Stage 1	10	-	-	-	-	-
Stage 2	90	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	899	1071	1583	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	882	1071	1583	-	-	-
Mov Cap-2 Maneuver	882	-	-	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	3.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1583	-	882	1071	-	-
HCM Lane V/C Ratio	0.019	-	0.057	0.075	-	-
HCM Control Delay (s)	7.3	-	9.3	8.6	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.2	-	-

Intersection						
Int Delay, s/veh	4.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	20	10	10	20
Future Vol, veh/h	30	10	20	10	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	10	20	10	10	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	65	25	0	0	30	0
Stage 1	25	-	-	-	-	-
Stage 2	40	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	941	1051	-	-	1583	-
Stage 1	998	-	-	-	-	-
Stage 2	982	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	935	1051	-	-	1583	-
Mov Cap-2 Maneuver	935	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	2.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	962	1583	-
HCM Lane V/C Ratio	-	-	0.042	0.006	-
HCM Control Delay (s)	-	-	8.9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	8.3					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	10	400	20	10	210
Future Vol, veh/h	10	10	400	20	10	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	4	2	2	4
Mvmt Flow	10	10	400	20	10	210

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	20	0	835	15
Stage 1	-	-	-	-	15	-
Stage 2	-	-	-	-	820	-
Critical Hdwy	-	-	4.14	-	6.42	6.24
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.336
Pot Cap-1 Maneuver	-	-	1583	-	338	1059
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	433	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1583	-	251	1059
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	322	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.7	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	924	-	-	1583	-
HCM Lane V/C Ratio	0.238	-	-	0.253	-
HCM Control Delay (s)	10.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	1	-

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	10	150	40	40	330	10	40	10	10	10	10	10
Future Vol, veh/h	10	150	40	40	330	10	40	10	10	10	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	150	40	40	330	10	40	10	10	10	10	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	11.2	8.9	8.5
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	67%	5%	11%	33%
Vol Thru, %	17%	75%	87%	33%
Vol Right, %	17%	20%	3%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	200	380	30
LT Vol	40	10	40	10
Through Vol	10	150	330	10
RT Vol	10	40	10	10
Lane Flow Rate	60	200	380	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.088	0.248	0.463	0.043
Departure Headway (Hd)	5.289	4.462	4.389	5.173
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	804	821	690
Service Time	3.336	2.491	2.415	3.224
HCM Lane V/C Ratio	0.089	0.249	0.463	0.043
HCM Control Delay	8.9	9	11.2	8.5
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.3	1	2.5	0.1

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	150	10	100	350	10	10
Future Vol, veh/h	150	10	100	350	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	195	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	10	100	350	10	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	160	0	705	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	550	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1419	-	403	891
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	578	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1419	-	375	891
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	538	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	528	-	-	1419	-
HCM Lane V/C Ratio	0.038	-	-	0.07	-
HCM Control Delay (s)	12.1	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	60	50	370	300	70	110
v/c Ratio	0.03	0.03	0.20	0.19	0.11	0.16
Control Delay	8.5	0.0	7.7	0.3	6.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	0.0	7.7	0.3	6.2	6.0
Queue Length 50th (ft)	1	0	8	0	5	0
Queue Length 95th (ft)	19	0	87	0	23	21
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3539	1550	3320	1550	1770	2580
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.11	0.19	0.04	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	60	50	20	350	300	0	0	0	70	0	110
Future Volume (vph)	0	60	50	20	350	300	0	0	0	70	0	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3530	1550				1770		2787
Flt Permitted		1.00	1.00		0.94	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3319	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	60	50	20	350	300	0	0	0	70	0	110
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	100
Lane Group Flow (vph)	0	60	50	0	370	300	0	0	0	70	0	10
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free	Perm	NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free	2		Free						
Actuated Green, G (s)		9.0	28.5		8.6	28.5				8.7		2.2
Effective Green, g (s)		11.4	28.5		11.4	28.5				9.1		2.6
Actuated g/C Ratio		0.40	1.00		0.40	1.00				0.32		0.09
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1415	1550		1327	1550				565		254
v/s Ratio Prot		0.02								0.04		0.00
v/s Ratio Perm			0.03		c0.11	c0.19						
v/c Ratio		0.04	0.03		0.28	0.19				0.12		0.04
Uniform Delay, d1		5.2	0.0		5.8	0.0				6.9		11.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.0		0.0	0.3				0.0		0.0
Delay (s)		5.2	0.0		5.8	0.3				6.9		11.8
Level of Service		A	A		A	A				A		B
Approach Delay (s)		2.9			3.3			0.0			9.9	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	28.5	Sum of lost time (s)	12.4
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	80	30	390	50	120	130	70
v/c Ratio	0.07	0.02	0.35	0.09	0.29	0.31	0.06
Control Delay	12.9	0.0	13.3	5.2	19.3	19.5	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	0.0	13.3	5.2	19.3	19.5	2.1
Queue Length 50th (ft)	5	0	30	0	20	21	0
Queue Length 95th (ft)	28	0	111	20	104	111	7
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3443	1550	3443	1495	1495	1505	2716
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.11	0.03	0.08	0.09	0.03

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	80	30	0	390	50	240	10	70	0	0	0
Future Volume (vph)	0	80	30	0	390	50	240	10	70	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1550		3539	1547	1681	1692	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1550		3539	1547	1681	1692	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	80	30	0	390	50	240	10	70	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	35	0	0	36	0	0	0
Lane Group Flow (vph)	0	80	30	0	390	15	120	130	34	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		11.1	38.8		10.2	10.2	7.7	7.7	17.3			
Effective Green, g (s)		12.0	38.8		12.0	12.0	9.2	9.2	18.8			
Actuated g/C Ratio		0.31	1.00		0.31	0.31	0.24	0.24	0.48			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		1094	1550		1094	478	398	401	1350			
v/s Ratio Prot		0.02			c0.11		0.07	c0.08	0.01			
v/s Ratio Perm			c0.02			0.01						
v/c Ratio		0.07	0.02		0.36	0.03	0.30	0.32	0.03			
Uniform Delay, d1		9.5	0.0		10.4	9.3	12.2	12.2	5.2			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.0		0.1	0.0	0.2	0.2	0.0			
Delay (s)		9.5	0.0		10.5	9.4	12.3	12.4	5.2			
Level of Service		A	A		B	A	B	B	A			
Approach Delay (s)		6.9			10.3			10.8			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	38.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	130	10	60	70	10	90
Future Vol, veh/h	130	10	60	70	10	90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	10	60	70	10	90
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9.4	7.9	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	10%
Vol Thru, %	46%	0%	0%	90%
Vol Right, %	54%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	130	10	100
LT Vol	0	130	0	10
Through Vol	60	0	0	90
RT Vol	70	0	10	0
Lane Flow Rate	130	130	10	100
Geometry Grp	2	7	7	2
Degree of Util (X)	0.149	0.2	0.012	0.125
Departure Headway (Hd)	4.12	5.537	4.332	4.486
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	872	649	827	801
Service Time	2.134	3.261	2.056	2.501
HCM Lane V/C Ratio	0.149	0.2	0.012	0.125
HCM Control Delay	7.9	9.6	7.1	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.7	0	0.4

Intersection	
Intersection Delay, s/veh	19.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	100	10	10	510	80	10	10	10	20	10	30
Future Vol, veh/h	10	100	10	10	510	80	10	10	10	20	10	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	100	10	10	510	80	10	10	10	20	10	30
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	9	22.8	9.3	9.2
HCM LOS	A	C	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	50%	0%	91%	0%	86%	0%	25%
Vol Right, %	0%	50%	0%	9%	0%	14%	0%	75%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	20	10	110	10	590	20	40
LT Vol	10	0	10	0	10	0	20	0
Through Vol	0	10	0	100	0	510	0	10
RT Vol	0	10	0	10	0	80	0	30
Lane Flow Rate	10	20	10	110	10	590	20	40
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.019	0.033	0.016	0.16	0.015	0.788	0.038	0.064
Departure Headway (Hd)	6.879	6.017	5.795	5.228	5.405	4.808	6.822	5.784
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	518	591	616	684	662	755	523	616
Service Time	4.652	3.79	3.545	2.977	3.139	2.542	4.589	3.55
HCM Lane V/C Ratio	0.019	0.034	0.016	0.161	0.015	0.781	0.038	0.065
HCM Control Delay	9.8	9	8.6	9	8.2	23	9.9	8.9
HCM Lane LOS	A	A	A	A	A	C	A	A
HCM 95th-tile Q	0.1	0.1	0	0.6	0	7.9	0.1	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	110	150	0	530	790	0	0	0	110	0	30
Future Vol, veh/h	0	110	150	0	530	790	0	0	0	110	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	150	-	-	100	-	-	-	0	-	440
Veh in Median Storage, #	-	0	-	-	0	-	-	16965	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	110	150	0	530	790	0	0	0	110	0	30

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	-	-	0				640	-	530
Stage 1	-	-	-	-	-	-				530	-	-
Stage 2	-	-	-	-	-	-				110	-	-
Critical Hdwy	-	-	-	-	-	-				6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-				3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0				440	0	549
Stage 1	0	-	0	0	-	0				590	0	-
Stage 2	0	-	0	0	-	0				915	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	-	-	-				440	0	549
Mov Cap-2 Maneuver	-	-	-	-	-	-				440	0	-
Stage 1	-	-	-	-	-	-				590	0	-
Stage 2	-	-	-	-	-	-				915	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	440	549
HCM Lane V/C Ratio	-	-	0.25	0.055
HCM Control Delay (s)	-	-	15.9	11.9
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	1	0.2

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	150	10	1090	120	230	550
v/c Ratio	0.11	0.01	0.83	0.08	0.71	0.35
Control Delay	4.3	0.0	16.6	0.1	38.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	0.0	16.6	0.1	38.7	0.6
Queue Length 50th (ft)	16	0	262	0	88	0
Queue Length 95th (ft)	43	0	#694	0	153	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	1309	1550	1309	1583	658	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.01	0.83	0.08	0.35	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	150	10	0	1090	120	230	0	550	0	0	0
Future Volume (veh/h)	0	150	10	0	1090	120	230	0	550	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	150	0	0	1090	0	230	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	1273		0	1291		274	0				
Arrive On Green	0.00	0.68	0.00	0.00	0.69	0.00	0.15	0.00	0.00			
Sat Flow, veh/h	0	1870	1585	0	1870	1585	1781	0	1585			
Grp Volume(v), veh/h	0	150	0	0	1090	0	230	0	0			
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	0.0	1.4	0.0	0.0	22.2	0.0	6.4	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	1.4	0.0	0.0	22.2	0.0	6.4	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1273		0	1291		274	0				
V/C Ratio(X)	0.00	0.12		0.00	0.84		0.84	0.00				
Avail Cap(c_a), veh/h	0	1676		0	1676		902	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	2.9	0.0	0.0	5.9	0.0	21.1	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	3.3	0.0	2.6	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	0.0	5.2	0.0	2.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	2.9	0.0	0.0	9.2	0.0	23.7	0.0	0.0			
LnGrp LOS	A	A		A	A		C	A				
Approach Vol, veh/h		150	A		1090	A		230	A			
Approach Delay, s/veh		2.9			9.2			23.7				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		39.4				39.4		11.9				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		44.5				* 45		26.5				
Max Q Clear Time (g_c+I1), s		24.2				3.4		8.4				
Green Ext Time (p_c), s		9.7				0.7		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			10.8									
HCM 6th LOS			B									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	20	0	3060	0	730	100	0	2000	510
Future Vol, veh/h	0	0	0	20	0	3060	0	730	100	0	2000	510
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	20	0	3060	0	730	100	0	2000	510

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1730	-	-	-	0	-	-	-	0
Stage 1	730	-	-	-	-	-	-	-	-
Stage 2	1000	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	88	0	0	0	-	0	0	-	0
Stage 1	476	0	0	0	-	0	0	-	0
Stage 2	317	0	0	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	88	0	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	88	0	-	-	-	-	-	-	-
Stage 1	476	0	-	-	-	-	-	-	-
Stage 2	317	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	57.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	88	-	-
HCM Lane V/C Ratio	-	0.227	-	-
HCM Control Delay (s)	-	57.6	0	-
HCM Lane LOS	-	F	A	-
HCM 95th %tile Q(veh)	-	0.8	-	-

Intersection						
Int Delay, s/veh	18.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	630	80	10	200	90	1940
Future Vol, veh/h	630	80	10	200	90	1940
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	630	80	10	200	90	1940

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	210	90	90	0	-	0
Stage 1	90	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	769	967	1504	-	-	0
Stage 1	933	-	-	-	-	0
Stage 2	893	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	764	967	1504	-	-	-
Mov Cap-2 Maneuver	764	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.6	0.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1504	-	764	967	-
HCM Lane V/C Ratio	0.007	-	0.825	0.083	-
HCM Control Delay (s)	7.4	0	27.7	9.1	-
HCM Lane LOS	A	A	D	A	-
HCM 95th %tile Q(veh)	0	-	9.1	0.3	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	50	10	10	70
Future Vol, veh/h	30	10	50	10	10	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	10	50	10	10	70
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	8	7.5	8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	12%
Vol Thru, %	100%	0%	0%	0%	88%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	10	30	10	80
LT Vol	0	0	30	0	10
Through Vol	50	0	0	0	70
RT Vol	0	10	0	10	0
Lane Flow Rate	50	10	30	10	80
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.065	0.011	0.044	0.011	0.099
Departure Headway (Hd)	4.644	3.943	5.272	4.07	4.474
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	767	901	671	865	796
Service Time	2.398	1.697	3.068	1.865	2.53
HCM Lane V/C Ratio	0.065	0.011	0.045	0.012	0.101
HCM Control Delay	7.7	6.7	8.3	6.9	8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0	0.3

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	80	10	30	70
Future Vol, veh/h	10	10	80	10	30	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	120	180	-	-	130
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	80	10	30	70

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	200	30	100	0	-	0
Stage 1	30	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	789	1044	1493	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	746	1044	1493	-	-	-
Mov Cap-2 Maneuver	746	-	-	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	6.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1493	-	746	1044	-	-
HCM Lane V/C Ratio	0.054	-	0.013	0.01	-	-
HCM Control Delay (s)	7.5	-	9.9	8.5	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	40	40	10	20
Future Vol, veh/h	20	20	40	40	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	20	40	40	10	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	100	60	0	0	80	0
Stage 1	60	-	-	-	-	-
Stage 2	40	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	899	1005	-	-	1518	-
Stage 1	963	-	-	-	-	-
Stage 2	982	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	893	1005	-	-	1518	-
Mov Cap-2 Maneuver	893	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	975	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	2.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	946	1518	-
HCM Lane V/C Ratio	-	-	0.042	0.007	-
HCM Control Delay (s)	-	-	9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	20	140	30	10	290
Future Vol, veh/h	30	20	140	30	10	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	4	2	2	4
Mvmt Flow	30	20	140	30	10	290

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	50	0	350	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	-	-	4.14	-	6.42	6.24
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.336
Pot Cap-1 Maneuver	-	-	1544	-	647	1026
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	744	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1544	-	587	1026
Mov Cap-2 Maneuver	-	-	-	-	587	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	676	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.2	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1001	-	-	1544	-
HCM Lane V/C Ratio	0.3	-	-	0.091	-
HCM Control Delay (s)	10.1	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.3	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	250	40	10	110	10	30	20	70	10	10	10
Future Vol, veh/h	10	250	40	10	110	10	30	20	70	10	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	250	40	10	110	10	30	20	70	10	10	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.9	8.5	8.5	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	3%	8%	33%
Vol Thru, %	17%	83%	85%	33%
Vol Right, %	58%	13%	8%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	300	130	30
LT Vol	30	10	10	10
Through Vol	20	250	110	10
RT Vol	70	40	10	10
Lane Flow Rate	120	300	130	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.155	0.364	0.166	0.041
Departure Headway (Hd)	4.638	4.365	4.585	4.925
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	772	825	781	725
Service Time	2.675	2.394	2.619	2.971
HCM Lane V/C Ratio	0.155	0.364	0.166	0.041
HCM Control Delay	8.5	9.9	8.5	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	1.7	0.6	0.1

Intersection						
Int Delay, s/veh	1.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	300	10	10	120	10	70
Future Vol, veh/h	300	10	10	120	10	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	195	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	10	10	120	10	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	310	0	445	305
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	140	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1250	-	571	735
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	887	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1250	-	566	735
Mov Cap-2 Maneuver	-	-	-	-	566	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	880	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	709	-	-	1250	-
HCM Lane V/C Ratio	0.113	-	-	0.008	-
HCM Control Delay (s)	10.7	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	210	160	120	100	60	30
v/c Ratio	0.09	0.10	0.06	0.06	0.08	0.04
Control Delay	5.9	0.1	6.2	0.1	3.9	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	0.1	6.2	0.1	3.9	2.8
Queue Length 50th (ft)	0	0	0	0	0	0
Queue Length 95th (ft)	50	0	32	0	21	4
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3539	1550	3224	1550	1770	2586
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.10	0.04	0.06	0.03	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	210	160	10	110	100	0	0	0	60	0	30
Future Volume (vph)	0	210	160	10	110	100	0	0	0	60	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3525	1550				1770		2787
Flt Permitted		1.00	1.00		0.91	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3223	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	210	160	10	110	100	0	0	0	60	0	30
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	29
Lane Group Flow (vph)	0	210	160	0	120	100	0	0	0	60	0	1
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free	Perm	NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free	2		Free						
Actuated Green, G (s)		6.4	23.7		6.0	23.7				6.5		0.3
Effective Green, g (s)		8.8	23.7		8.8	23.7				6.9		0.7
Actuated g/C Ratio		0.37	1.00		0.37	1.00				0.29		0.03
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1314	1550		1196	1550				515		82
v/s Ratio Prot		c0.06								0.03		0.00
v/s Ratio Perm			c0.10		0.04	0.06						
v/c Ratio		0.16	0.10		0.10	0.06				0.12		0.01
Uniform Delay, d1		5.0	0.0		4.9	0.0				6.2		11.2
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.1		0.0	0.1				0.0		0.0
Delay (s)		5.0	0.1		4.9	0.1				6.2		11.2
Level of Service		A	A		A	A				A		B
Approach Delay (s)		2.9			2.7			0.0			7.9	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	23.7	Sum of lost time (s)	12.4
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	200	70	120	60	40	50	620
v/c Ratio	0.24	0.05	0.14	0.15	0.13	0.16	0.35
Control Delay	13.1	0.1	12.8	5.8	19.0	19.1	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	0.1	12.8	5.8	19.0	19.1	1.3
Queue Length 50th (ft)	13	0	7	0	5	6	0
Queue Length 95th (ft)	55	0	36	23	45	52	21
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3478	1550	3478	1510	1512	1531	2753
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.05	0.03	0.04	0.03	0.03	0.23

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	200	70	0	120	60	80	10	620	0	0	0
Future Volume (vph)	0	200	70	0	120	60	80	10	620	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1550		3539	1548	1681	1702	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1550		3539	1548	1681	1702	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	200	70	0	120	60	80	10	620	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	45	0	0	294	0	0	0
Lane Group Flow (vph)	0	200	70	0	120	15	40	50	326	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		7.8	35.2		6.9	6.9	5.2	5.2	17.0			
Effective Green, g (s)		8.7	35.2		8.7	8.7	6.7	6.7	18.5			
Actuated g/C Ratio		0.25	1.00		0.25	0.25	0.19	0.19	0.53			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		874	1550		874	382	319	323	1464			
v/s Ratio Prot		c0.06			0.03		0.02	0.03	c0.12			
v/s Ratio Perm			0.05			0.01						
v/c Ratio		0.23	0.05		0.14	0.04	0.13	0.15	0.22			
Uniform Delay, d1		10.6	0.0		10.3	10.1	11.8	11.9	4.5			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.1		0.0	0.0	0.1	0.1	0.0			
Delay (s)		10.6	0.1		10.4	10.1	11.9	12.0	4.5			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		7.9			10.3			5.5			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	35.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	10	140	290	10	40
Future Vol, veh/h	40	10	140	290	10	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	10	140	290	10	40
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	8.8	9.6	7.8
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	20%
Vol Thru, %	33%	0%	0%	80%
Vol Right, %	67%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	430	40	10	50
LT Vol	0	40	0	10
Through Vol	140	0	0	40
RT Vol	290	0	10	0
Lane Flow Rate	430	40	10	50
Geometry Grp	2	7	7	2
Degree of Util (X)	0.436	0.067	0.013	0.063
Departure Headway (Hd)	3.653	5.995	4.786	4.503
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	972	601	752	800
Service Time	1.737	3.699	2.489	2.507
HCM Lane V/C Ratio	0.442	0.067	0.013	0.063
HCM Control Delay	9.6	9.1	7.6	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	2.2	0.2	0	0.2

Intersection	
Intersection Delay, s/veh	19.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	30	490	10	10	390	30	10	10	10	80	10	10
Future Vol, veh/h	30	490	10	10	390	30	10	10	10	80	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	490	10	10	390	30	10	10	10	80	10	10
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	22.6	17.7	10.2	11.4
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	50%	0%	98%	0%	93%	0%	50%
Vol Right, %	0%	50%	0%	2%	0%	7%	0%	50%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	20	30	500	10	420	80	20
LT Vol	10	0	30	0	10	0	80	0
Through Vol	0	10	0	490	0	390	0	10
RT Vol	0	10	0	10	0	30	0	10
Lane Flow Rate	10	20	30	500	10	420	80	20
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.022	0.038	0.05	0.76	0.017	0.647	0.168	0.037
Departure Headway (Hd)	7.778	6.907	5.989	5.47	6.098	5.543	7.548	6.679
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	460	518	599	665	588	651	475	536
Service Time	5.531	4.66	3.714	3.195	3.826	3.271	5.293	4.425
HCM Lane V/C Ratio	0.022	0.039	0.05	0.752	0.017	0.645	0.168	0.037
HCM Control Delay	10.7	9.9	9	23.4	8.9	17.9	11.8	9.7
HCM Lane LOS	B	A	A	C	A	C	B	A
HCM 95th-tile Q	0.1	0.1	0.2	7	0.1	4.7	0.6	0.1

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	260	320	0	410	360	0	0	0	120	0	30
Future Vol, veh/h	0	260	320	0	410	360	0	0	0	120	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	150	-	-	100	-	-	-	0	-	440
Veh in Median Storage, #	-	0	-	-	0	-	-	16965	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	260	320	0	410	360	0	0	0	120	0	30

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	-	-	0				670	-	410
Stage 1	-	-	-	-	-	-				410	-	-
Stage 2	-	-	-	-	-	-				260	-	-
Critical Hdwy	-	-	-	-	-	-				6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-				3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0				422	0	642
Stage 1	0	-	0	0	-	0				670	0	-
Stage 2	0	-	0	0	-	0				783	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	-	-	-				422	0	642
Mov Cap-2 Maneuver	-	-	-	-	-	-				422	0	-
Stage 1	-	-	-	-	-	-				670	0	-
Stage 2	-	-	-	-	-	-				783	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	422	642
HCM Lane V/C Ratio	-	-	0.284	0.047
HCM Control Delay (s)	-	-	16.9	10.9
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	1.2	0.1

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	350	60	490	140	260	950
v/c Ratio	0.36	0.04	0.50	0.09	0.56	0.61
Control Delay	7.2	0.1	8.7	0.1	17.8	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	0.1	8.7	0.1	17.8	1.8
Queue Length 50th (ft)	34	0	53	0	41	0
Queue Length 95th (ft)	96	0	144	0	118	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	1824	1550	1824	1583	1244	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.04	0.27	0.09	0.21	0.61

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	350	60	0	490	140	260	0	950	0	0	0
Future Volume (veh/h)	0	350	60	0	490	140	260	0	950	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	350	0	0	490	0	260	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	839		0	876		380	0				
Arrive On Green	0.00	0.45	0.00	0.00	0.47	0.00	0.21	0.00	0.00			
Sat Flow, veh/h	0	1870	1585	0	1870	1585	1781	0	1585			
Grp Volume(v), veh/h	0	350	0	0	490	0	260	0	0			
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1870	1585	1781	0	1585			
Q Serve(g_s), s	0.0	3.2	0.0	0.0	4.7	0.0	3.4	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	3.2	0.0	0.0	4.7	0.0	3.4	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	839		0	876		380	0				
V/C Ratio(X)	0.00	0.42		0.00	0.56		0.68	0.00				
Avail Cap(c_a), veh/h	0	3425		0	3425		1843	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	4.7	0.0	0.0	4.8	0.0	9.1	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.6	0.0	0.8	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.0	0.0	0.7	0.0	0.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	4.9	0.0	0.0	5.4	0.0	9.9	0.0	0.0			
LnGrp LOS	A	A		A	A		A	A				
Approach Vol, veh/h		350	A		490	A		260	A			
Approach Delay, s/veh		4.9			5.4			9.9				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		15.8				15.8		9.4				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		44.5				* 45		26.5				
Max Q Clear Time (g_c+I1), s		6.7				5.2		5.4				
Green Ext Time (p_c), s		3.5				1.9		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		6.3
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	20	0	1170	0	670	80	0	3170	750
Future Vol, veh/h	0	0	0	20	0	1170	0	670	80	0	3170	750
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	20	0	1170	0	670	80	0	3170	750

Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				2255	-	-	-	0	-	-	-	0
Stage 1				670	-	-	-	-	-	-	-	-
Stage 2				1585	-	-	-	-	-	-	-	-
Critical Hdwy				6.63	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1				5.43	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.83	-	-	-	-	-	-	-	-
Follow-up Hdwy				3.519	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver				40	0	0	0	-	0	0	-	0
Stage 1				508	0	0	0	-	0	0	-	0
Stage 2				155	0	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver				40	0	-	-	-	-	-	-	-
Mov Cap-2 Maneuver				40	0	-	-	-	-	-	-	-
Stage 1				508	0	-	-	-	-	-	-	-
Stage 2				155	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	163.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	40	-	-
HCM Lane V/C Ratio	-	0.5	-	-
HCM Control Delay (s)	-	163.9	0	-
HCM Lane LOS	-	F	A	-
HCM 95th %tile Q(veh)	-	1.8	-	-

Intersection						
Int Delay, s/veh	44.3					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	570	600	10	190	370	2860
Future Vol, veh/h	570	600	10	190	370	2860
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	570	600	10	190	370	2860

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	485	370	370	0	-	0
Stage 1	370	-	-	-	-	-
Stage 2	115	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 526	675	1187	-	-	0
Stage 1	698	-	-	-	-	0
Stage 2	898	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 521	675	1187	-	-	-
Mov Cap-2 Maneuver	~ 521	-	-	-	-	-
Stage 1	692	-	-	-	-	-
Stage 2	898	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	65.8		0.4		0	
HCM LOS	F					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1187	-	521	675	-
HCM Lane V/C Ratio	0.008	-	1.094	0.889	-
HCM Control Delay (s)	8.1	0	95.1	37.9	-
HCM Lane LOS	A	A	F	E	-
HCM 95th %tile Q(veh)	0	-	18	11	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	10	120	30	10	40
Future Vol, veh/h	10	10	120	30	10	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	120	30	10	40
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	7.7	7.9	7.9
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	20%
Vol Thru, %	100%	0%	0%	0%	80%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	30	10	10	50
LT Vol	0	0	10	0	10
Through Vol	120	0	0	0	40
RT Vol	0	30	0	10	0
Lane Flow Rate	120	30	10	10	50
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.153	0.032	0.015	0.012	0.063
Departure Headway (Hd)	4.593	3.893	5.502	4.299	4.518
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	781	919	655	838	788
Service Time	2.322	1.621	3.202	1.999	2.577
HCM Lane V/C Ratio	0.154	0.033	0.015	0.012	0.063
HCM Control Delay	8.2	6.8	8.3	7.1	7.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.5	0.1	0	0	0.2

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	80	30	30	10	20
Future Vol, veh/h	50	80	30	30	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	120	180	-	-	130
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	80	30	30	10	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	100	10	30	0	-	0
Stage 1	10	-	-	-	-	-
Stage 2	90	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	899	1071	1583	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	882	1071	1583	-	-	-
Mov Cap-2 Maneuver	882	-	-	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	3.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1583	-	882	1071	-	-
HCM Lane V/C Ratio	0.019	-	0.057	0.075	-	-
HCM Control Delay (s)	7.3	-	9.3	8.6	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.2	-	-

Appendix C

Analysis Worksheets for Cumulative Conditions (Intersections)

Intersection	
Int Delay, s/veh	4.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	10	10	10	20
Future Vol, veh/h	30	10	10	10	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	10	10	10	10	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	55	15	0	0	20	0
Stage 1	15	-	-	-	-	-
Stage 2	40	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	953	1065	-	-	1596	-
Stage 1	1008	-	-	-	-	-
Stage 2	982	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	947	1065	-	-	1596	-
Mov Cap-2 Maneuver	947	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	2.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	974	1596	-
HCM Lane V/C Ratio	-	-	0.041	0.006	-
HCM Control Delay (s)	-	-	8.9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	10	10	40	20	10	10
v/c Ratio	0.02	0.03	0.01	0.01	0.02	0.00
Control Delay	12.6	8.2	13.8	4.5	12.6	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	8.2	13.8	4.5	12.6	3.5
Queue Length 50th (ft)	1	0	0	0	1	0
Queue Length 95th (ft)	13	10	22	14	13	3
Internal Link Dist (ft)	4683			3724	1647	
Turn Bay Length (ft)		175	300			175
Base Capacity (vph)	1641	1377	2899	1752	1542	2538
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.01	0.01	0.01	0.00

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	10	40	20	10	10
Future Volume (veh/h)	10	10	40	20	10	10
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	10	40	20	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	68	58	494	826	28	442
Arrive On Green	0.04	0.04	0.14	0.44	0.02	0.02
Sat Flow, veh/h	1870	1574	3456	1870	1781	2790
Grp Volume(v), veh/h	10	10	40	20	10	10
Grp Sat Flow(s),veh/h/ln	1870	1574	1728	1870	1781	1395
Q Serve(g_s), s	0.1	0.1	0.2	0.1	0.1	0.1
Cycle Q Clear(g_c), s	0.1	0.1	0.2	0.1	0.1	0.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	68	58	494	826	28	442
V/C Ratio(X)	0.15	0.17	0.08	0.02	0.36	0.02
Avail Cap(c_a), veh/h	2681	2256	2715	4640	2248	3919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.8	9.8	7.8	3.3	10.2	7.5
Incr Delay (d2), s/veh	1.0	1.4	0.1	0.0	7.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.8	11.2	7.9	3.3	17.7	7.5
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	20			60	20	
Approach Delay, s/veh	11.0			6.4	12.6	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2	6	8
Phs Duration (G+Y+Rc), s	8.5	6.7	15.2	5.8
Change Period (Y+Rc), s	5.5	5.9	5.9	5.5
Max Green Setting (Gmax), s	16.5	30.1	52.1	26.5
Max Q Clear Time (g_c+I1), s	2.2	2.1	2.1	2.1
Green Ext Time (p_c), s	0.1	0.0	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	8.5
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	10	10	230	50	10	10	10	30	10	10	10
v/c Ratio	0.06	0.02	0.02	0.45	0.03	0.01	0.04	0.03	0.06	0.06	0.03	0.02
Control Delay	28.2	18.7	0.1	23.3	9.3	0.0	25.0	17.5	0.2	28.2	18.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	18.7	0.1	23.3	9.3	0.0	25.0	17.5	0.2	28.2	18.8	0.1
Queue Length 50th (ft)	1	1	0	20	0	0	1	1	0	1	1	0
Queue Length 95th (ft)	21	16	0	#257	40	0	20	15	0	21	16	0
Internal Link Dist (ft)		3724			3503			1141			1439	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	156	1086	999	514	1533	1301	335	1362	1193	156	1180	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.01	0.01	0.45	0.03	0.01	0.03	0.01	0.03	0.06	0.01	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	10	10	230	50	10	10	10	30	10	10	10
Future Volume (veh/h)	10	10	10	230	50	10	10	10	30	10	10	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	10	10	230	50	10	10	10	30	10	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	184	154	300	485	409	14	100	84	14	100	84
Arrive On Green	0.01	0.10	0.10	0.17	0.26	0.26	0.01	0.05	0.05	0.01	0.05	0.05
Sat Flow, veh/h	1781	1870	1569	1781	1870	1579	1781	1870	1567	1781	1870	1567
Grp Volume(v), veh/h	10	10	10	230	50	10	10	10	30	10	10	10
Grp Sat Flow(s),veh/h/ln	1781	1870	1569	1781	1870	1579	1781	1870	1567	1781	1870	1567
Q Serve(g_s), s	0.2	0.2	0.2	4.2	0.7	0.2	0.2	0.2	0.6	0.2	0.2	0.2
Cycle Q Clear(g_c), s	0.2	0.2	0.2	4.2	0.7	0.2	0.2	0.2	0.6	0.2	0.2	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	14	184	154	300	485	409	14	100	84	14	100	84
V/C Ratio(X)	0.71	0.05	0.06	0.77	0.10	0.02	0.71	0.10	0.36	0.71	0.10	0.12
Avail Cap(c_a), veh/h	184	1272	1067	603	1713	1446	393	1603	1343	184	1382	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.8	13.9	13.9	13.5	9.6	9.4	16.8	15.3	15.5	16.8	15.3	15.3
Incr Delay (d2), s/veh	48.3	0.1	0.2	4.1	0.1	0.0	48.3	0.4	2.5	48.3	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.1	1.3	0.2	0.0	0.2	0.1	0.2	0.2	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	14.0	14.1	17.6	9.7	9.4	65.1	15.7	18.0	65.1	15.7	15.9
LnGrp LOS	E	B	B	B	A	A	E	B	B	E	B	B
Approach Vol, veh/h		30			290			50			30	
Approach Delay, s/veh		31.1			15.9			27.0			32.2	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	7.7	11.2	9.2	5.8	7.7	5.8	14.7
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	3.5	29.1	11.5	23.1	7.5	25.1	3.5	31.1
Max Q Clear Time (g_c+I1), s	2.2	2.6	6.2	2.2	2.2	2.2	2.2	2.7
Green Ext Time (p_c), s	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	19.7
HCM 6th LOS	B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	80	10	1090	370	10	180
v/c Ratio	0.26	0.04	0.77	0.15	0.04	0.35
Control Delay	30.4	17.1	22.6	4.3	32.2	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	17.1	22.6	4.3	32.2	8.0
Queue Length 50th (ft)	24	0	145	17	3	0
Queue Length 95th (ft)	99	15	485	68	22	33
Internal Link Dist (ft)	3503			1595	3285	
Turn Bay Length (ft)		150	375			
Base Capacity (vph)	972	819	2926	3323	852	1402
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.01	0.37	0.11	0.01	0.13

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	80	10	1090	370	10	180
Future Volume (veh/h)	80	10	1090	370	10	180
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	10	1090	370	10	180
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	187	157	1434	2264	194	303
Arrive On Green	0.10	0.10	0.41	0.64	0.11	0.11
Sat Flow, veh/h	1870	1569	3456	3647	1781	2790
Grp Volume(v), veh/h	80	10	1090	370	10	180
Grp Sat Flow(s),veh/h/ln	1870	1569	1728	1777	1781	1395
Q Serve(g_s), s	1.8	0.3	12.1	1.9	0.2	2.8
Cycle Q Clear(g_c), s	1.8	0.3	12.1	1.9	0.2	2.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	187	157	1434	2264	194	303
V/C Ratio(X)	0.43	0.06	0.76	0.16	0.05	0.59
Avail Cap(c_a), veh/h	1292	1084	4120	7127	1135	1778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	18.3	11.2	3.3	17.9	19.1
Incr Delay (d2), s/veh	1.6	0.2	0.9	0.0	0.1	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	2.8	0.1	0.1	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.6	18.5	12.1	3.3	18.0	20.9
LnGrp LOS	C	B	B	A	B	C
Approach Vol, veh/h	90			1460	190	
Approach Delay, s/veh	20.3			9.9	20.7	
Approach LOS	C			A	C	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	10.4	24.1	10.4	34.5
Change Period (Y+Rc), s	5.5	5.5	5.9	5.9
Max Green Setting (Gmax), s	28.6	53.5	31.0	90.0
Max Q Clear Time (g_c+I1), s	4.8	14.1	3.8	3.9
Green Ext Time (p_c), s	0.6	4.5	0.3	2.2

Intersection Summary	
HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	300	10	120	1590	10	30
v/c Ratio	0.16	0.01	0.81	0.57	0.03	0.11
Control Delay	9.1	5.9	72.6	7.7	24.0	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	5.9	72.6	7.7	24.0	11.1
Queue Length 50th (ft)	24	0	36	118	3	0
Queue Length 95th (ft)	80	8	#242	473	18	22
Internal Link Dist (ft)	1595			4369	10448	
Turn Bay Length (ft)		150	180			175
Base Capacity (vph)	3470	1511	148	3534	1157	1030
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.01	0.81	0.45	0.01	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	300	10	120	1590	10	30
Future Volume (veh/h)	300	10	120	1590	10	30
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	300	10	120	1590	10	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1718	765	153	2490	47	42
Arrive On Green	0.48	0.48	0.09	0.70	0.03	0.03
Sat Flow, veh/h	3647	1582	1781	3647	1781	1585
Grp Volume(v), veh/h	300	10	120	1590	10	30
Grp Sat Flow(s),veh/h/ln	1777	1582	1781	1777	1781	1585
Q Serve(g_s), s	2.0	0.1	2.8	10.1	0.2	0.8
Cycle Q Clear(g_c), s	2.0	0.1	2.8	10.1	0.2	0.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1718	765	153	2490	47	42
V/C Ratio(X)	0.17	0.01	0.79	0.64	0.21	0.71
Avail Cap(c_a), veh/h	8252	3673	175	9068	1359	1209
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.1	5.6	18.7	3.4	19.9	20.2
Incr Delay (d2), s/veh	0.0	0.0	18.6	0.3	2.2	19.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.6	0.1	0.1	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.1	5.6	37.3	3.7	22.1	39.8
LnGrp LOS	A	A	D	A	C	D
Approach Vol, veh/h	310			1710	40	
Approach Delay, s/veh	6.1			6.0	35.4	
Approach LOS	A			A	D	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	6.6	9.1	26.1	35.2
Change Period (Y+Rc), s	5.5	5.5	5.9	5.9
Max Green Setting (Gmax), s	31.9	4.1	97.1	106.7
Max Q Clear Time (g_c+I1), s	2.8	4.8	4.0	12.1
Green Ext Time (p_c), s	0.1	0.0	1.8	17.2

Intersection Summary	
HCM 6th Ctrl Delay	6.6
HCM 6th LOS	A

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	210	80	520	300	80	700
v/c Ratio	0.19	0.05	0.50	0.19	0.16	0.66
Control Delay	10.7	0.1	12.7	0.3	7.7	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	0.1	12.7	0.3	7.7	5.6
Queue Length 50th (ft)	6	0	19	0	6	0
Queue Length 95th (ft)	60	0	141	0	28	47
Internal Link Dist (ft)	4369		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3523	1550	3518	1550	1740	2598
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.05	0.15	0.19	0.05	0.27

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	210	80	0	520	300	0	0	0	80	0	700
Future Volume (vph)	0	210	80	0	520	300	0	0	0	80	0	700
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.4	4.0		6.8	4.0				4.4		4.4
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	210	80	0	520	300	0	0	0	80	0	700
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	585
Lane Group Flow (vph)	0	210	80	0	520	300	0	0	0	80	0	115
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		9.6	32.4		9.2	32.4				12.0		5.3
Effective Green, g (s)		9.6	32.4		9.2	32.4				12.0		5.3
Actuated g/C Ratio		0.30	1.00		0.28	1.00				0.37		0.16
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1048	1550		1004	1550				655		455
v/s Ratio Prot		0.06			c0.15					0.05		0.04
v/s Ratio Perm			0.05			c0.19						
v/c Ratio		0.20	0.05		0.52	0.19				0.12		0.25
Uniform Delay, d1		8.5	0.0		9.7	0.0				6.7		11.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.1		0.2	0.3				0.0		0.1
Delay (s)		8.6	0.1		9.9	0.3				6.8		11.9
Level of Service		A	A		A	A				A		B
Approach Delay (s)		6.2			6.4			0.0			11.4	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	32.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	110	90	550	210	224	226	120
v/c Ratio	0.10	0.06	0.56	0.36	0.56	0.57	0.09
Control Delay	16.3	0.1	19.9	5.7	26.0	26.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	0.1	19.9	5.7	26.0	26.0	1.8
Queue Length 50th (ft)	10	0	63	0	53	53	0
Queue Length 95th (ft)	42	0	184	50	185	186	10
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3382	1550	3375	1473	1253	1258	2635
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.06	0.16	0.14	0.18	0.18	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	110	90	0	550	210	440	10	120	0	0	0
Future Volume (vph)	0	110	90	0	550	210	440	10	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.0		5.8	5.8	5.5	5.5	5.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		3539	1550		3539	1546	1681	1689	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		3539	1550		3539	1546	1681	1689	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	110	90	0	550	210	440	10	120	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	151	0	0	62	0	0	0
Lane Group Flow (vph)	0	110	90	0	550	59	224	226	58	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		14.6	48.7		13.7	13.7	11.6	11.6	23.7			
Effective Green, g (s)		14.6	48.7		13.7	13.7	11.6	11.6	23.7			
Actuated g/C Ratio		0.30	1.00		0.28	0.28	0.24	0.24	0.49			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		1060	1550		995	434	400	402	1356			
v/s Ratio Prot		0.03			c0.16		0.13	c0.13	0.02			
v/s Ratio Perm			c0.06			0.04						
v/c Ratio		0.10	0.06		0.55	0.14	0.56	0.56	0.04			
Uniform Delay, d1		12.3	0.0		14.9	13.1	16.3	16.3	6.6			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.1		0.4	0.1	1.1	1.1	0.0			
Delay (s)		12.3	0.1		15.3	13.1	17.4	17.4	6.6			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		6.8			14.7			15.1			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	48.7	Sum of lost time (s)	16.8
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	430	120	200	740	10	160	90	150	10	80	30
v/c Ratio	0.47	0.49	0.24	0.74	0.59	0.02	0.71	0.16	0.26	0.11	0.27	0.08
Control Delay	45.4	24.6	3.9	51.0	22.8	0.0	53.1	18.9	5.1	41.7	28.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	24.6	3.9	51.0	22.8	0.0	53.1	18.9	5.1	41.7	28.5	0.4
Queue Length 50th (ft)	30	76	0	76	134	0	62	24	0	4	29	0
Queue Length 95th (ft)	#126	156	25	#285	264	0	#239	74	40	24	73	0
Internal Link Dist (ft)		745			1992			1063			3284	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	172	1787	855	271	1985	933	226	979	892	87	834	782
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.24	0.14	0.74	0.37	0.01	0.71	0.09	0.17	0.11	0.10	0.04

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	430	120	200	740	10	160	90	150	10	80	30
Future Volume (veh/h)	80	430	120	200	740	10	160	90	150	10	80	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	430	0	200	740	0	160	90	150	10	80	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	767		262	1087		203	381	322	14	182	153
Arrive On Green	0.06	0.22	0.00	0.15	0.31	0.00	0.11	0.20	0.20	0.01	0.10	0.10
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1580	1781	1870	1575
Grp Volume(v), veh/h	80	430	0	200	740	0	160	90	150	10	80	30
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1580	1781	1870	1575
Q Serve(g_s), s	2.4	5.8	0.0	5.8	9.8	0.0	4.7	2.2	4.5	0.3	2.2	0.9
Cycle Q Clear(g_c), s	2.4	5.8	0.0	5.8	9.8	0.0	4.7	2.2	4.5	0.3	2.2	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	767		262	1087		203	381	322	14	182	153
V/C Ratio(X)	0.79	0.56		0.76	0.68		0.79	0.24	0.47	0.73	0.44	0.20
Avail Cap(c_a), veh/h	203	2096		319	2329		266	1149	971	103	978	823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	18.7	0.0	22.0	16.3	0.0	23.1	17.8	18.8	26.5	22.8	22.2
Incr Delay (d2), s/veh	12.5	0.6	0.0	8.5	0.8	0.0	11.0	0.3	1.0	52.3	1.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.9	0.0	2.6	3.1	0.0	2.2	0.8	1.4	0.3	0.9	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	19.4	0.0	30.5	17.1	0.0	34.1	18.2	19.8	78.8	24.5	22.9
LnGrp LOS	D	B		C	B		C	B	B	E	C	C
Approach Vol, veh/h		510	A		940	A		400			120	
Approach Delay, s/veh		22.2			19.9			25.2			28.6	
Approach LOS		C			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	16.8	13.4	17.5	11.6	11.1	8.6	22.3				
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9				
Max Green Setting (Gmax), s	3.1	32.9	9.6	31.6	8.0	28.0	6.1	35.1				
Max Q Clear Time (g_c+I1), s	2.3	6.5	7.8	7.8	6.7	4.2	4.4	11.8				
Green Ext Time (p_c), s	0.0	0.8	0.1	2.4	0.0	0.4	0.0	4.5				
Intersection Summary												
HCM 6th Ctrl Delay			22.1									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	140	320	10	280	1150	280	10	1030	150	60	760	190
v/c Ratio	0.41	0.22	0.02	0.62	0.70	0.46	0.09	0.68	0.26	0.23	0.39	0.27
Control Delay	52.1	29.2	0.1	52.3	33.7	15.9	60.2	35.3	5.7	53.8	24.1	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	29.2	0.1	52.3	33.7	15.9	60.2	35.3	5.7	53.8	24.1	4.7
Queue Length 50th (ft)	46	60	0	91	244	60	3	223	0	20	125	0
Queue Length 95th (ft)	93	98	0	169	363	161	14	323	44	48	212	50
Internal Link Dist (ft)		1627			1756			1585			1050	
Turn Bay Length (ft)	450		450	400		400	400		400	400		400
Base Capacity (vph)	629	2372	812	540	2250	778	108	2303	792	341	2649	904
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.13	0.01	0.52	0.51	0.36	0.09	0.45	0.19	0.18	0.29	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	320	10	280	1150	280	10	1030	150	60	760	190
Future Volume (veh/h)	140	320	10	280	1150	280	10	1030	150	60	760	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	320	10	280	1150	280	10	1030	150	60	760	190
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	1469	455	374	1693	524	26	1531	474	108	1653	512
Arrive On Green	0.06	0.29	0.29	0.11	0.33	0.33	0.01	0.30	0.30	0.03	0.32	0.32
Sat Flow, veh/h	3456	5106	1582	3456	5106	1582	3456	5106	1582	3456	5106	1582
Grp Volume(v), veh/h	140	320	10	280	1150	280	10	1030	150	60	760	190
Grp Sat Flow(s),veh/h/ln	1728	1702	1582	1728	1702	1582	1728	1702	1582	1728	1702	1582
Q Serve(g_s), s	3.3	4.0	0.4	6.6	16.2	12.0	0.2	14.8	6.1	1.4	9.9	7.7
Cycle Q Clear(g_c), s	3.3	4.0	0.4	6.6	16.2	12.0	0.2	14.8	6.1	1.4	9.9	7.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	222	1469	455	374	1693	524	26	1531	474	108	1653	512
V/C Ratio(X)	0.63	0.22	0.02	0.75	0.68	0.53	0.39	0.67	0.32	0.55	0.46	0.37
Avail Cap(c_a), veh/h	724	2721	843	621	2568	796	124	2641	818	393	3039	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	22.6	21.3	36.1	24.1	22.7	41.3	25.6	22.6	39.9	22.4	21.7
Incr Delay (d2), s/veh	2.9	0.1	0.0	3.0	0.5	0.8	9.3	0.5	0.4	4.4	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.4	0.1	2.7	5.8	4.0	0.1	5.3	2.1	0.6	3.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.0	22.7	21.3	39.2	24.6	23.5	50.6	26.2	23.0	44.3	22.6	22.1
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		470			1710			1190			1010	
Approach Delay, s/veh		28.1			26.8			26.0			23.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	30.9	14.5	29.9	6.1	32.9	10.9	33.6
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	9.5	43.2	15.0	44.5	3.0	49.7	17.5	42.0
Max Q Clear Time (g_c+I1), s	3.4	16.8	8.6	6.0	2.2	11.9	5.3	18.2
Green Ext Time (p_c), s	0.0	7.5	0.5	1.9	0.0	5.8	0.3	8.8

Intersection Summary			
HCM 6th Ctrl Delay			26.0
HCM 6th LOS			C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	430	10	60	2050	520	10	30	30	130	10	60
v/c Ratio	0.57	0.17	0.01	1.02	0.92	0.58	0.08	0.14	0.10	0.56	0.02	0.12
Control Delay	59.3	16.1	0.0	172.8	34.4	9.3	48.2	36.7	0.6	49.0	23.3	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	16.1	0.0	172.8	34.4	9.3	48.2	36.7	0.6	49.0	23.3	1.2
Queue Length 50th (ft)	48	45	0	34	372	40	5	16	0	67	4	0
Queue Length 95th (ft)	#165	116	0	#155	#855	212	26	42	0	160	17	5
Internal Link Dist (ft)		760			4518			633			10448	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	158	2519	834	59	2235	899	259	753	718	801	1324	1139
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.17	0.01	1.02	0.92	0.58	0.04	0.04	0.04	0.16	0.01	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	430	10	60	2050	520	10	30	30	130	10	60
Future Volume (veh/h)	90	430	10	60	2050	520	10	30	30	130	10	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	430	10	60	2050	520	10	30	30	130	10	60
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	2589	802	70	2457	761	13	116	98	179	290	245
Arrive On Green	0.07	0.51	0.51	0.04	0.48	0.48	0.01	0.06	0.06	0.10	0.15	0.15
Sat Flow, veh/h	1781	5106	1582	1781	5106	1582	1781	1870	1570	1781	1870	1579
Grp Volume(v), veh/h	90	430	10	60	2050	520	10	30	30	130	10	60
Grp Sat Flow(s),veh/h/ln	1781	1702	1582	1781	1702	1582	1781	1870	1570	1781	1870	1579
Q Serve(g_s), s	3.8	3.5	0.2	2.6	26.5	19.4	0.4	1.2	1.4	5.4	0.3	2.5
Cycle Q Clear(g_c), s	3.8	3.5	0.2	2.6	26.5	19.4	0.4	1.2	1.4	5.4	0.3	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	116	2589	802	70	2457	761	13	116	98	179	290	245
V/C Ratio(X)	0.78	0.17	0.01	0.86	0.83	0.68	0.75	0.26	0.31	0.73	0.03	0.25
Avail Cap(c_a), veh/h	187	2887	895	70	2553	791	306	888	746	947	1561	1318
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.1	10.1	9.3	36.4	17.1	15.3	37.7	34.1	34.2	33.3	27.4	28.3
Incr Delay (d2), s/veh	10.6	0.0	0.0	60.8	2.5	2.3	57.2	1.2	1.8	5.6	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.0	0.1	2.2	8.5	5.9	0.4	0.5	0.5	2.4	0.1	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	10.1	9.3	97.2	19.6	17.6	95.0	35.2	35.9	38.8	27.4	28.8
LnGrp LOS	D	B	A	F	B	B	F	D	D	D	C	C
Approach Vol, veh/h		530			2630			70			200	
Approach Delay, s/veh		16.2			21.0			44.1			35.3	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	10.0	8.5	44.5	6.1	17.1	10.5	42.6
Change Period (Y+Rc), s	5.5	5.3	5.5	5.9	5.5	5.3	5.5	5.9
Max Green Setting (Gmax), s	40.5	36.2	3.0	43.1	13.1	63.6	8.0	38.1
Max Q Clear Time (g_c+I1), s	7.4	3.4	4.6	5.5	2.4	4.5	5.8	28.5
Green Ext Time (p_c), s	0.3	0.2	0.0	2.7	0.0	0.2	0.0	8.2

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	760	430	2180	780	150	600
v/c Ratio	0.31	0.44	0.89	0.82	0.22	0.95
Control Delay	14.7	3.1	27.0	18.6	18.9	52.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	3.1	27.0	18.6	18.9	52.6
Queue Length 50th (ft)	94	0	401	201	55	304
Queue Length 95th (ft)	121	48	477	#424	97	#526
Internal Link Dist (ft)	4518		937			
Turn Bay Length (ft)		400		100		440
Base Capacity (vph)	2452	967	2452	956	718	654
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.44	0.89	0.82	0.21	0.92

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	760	430	0	2180	780	0	0	0	150	0	600
Future Volume (veh/h)	0	760	430	0	2180	780	0	0	0	150	0	600
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	760	0	0	2180	0				150	0	600
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2423		0	2423					706	0	628
Arrive On Green	0.00	0.47	0.00	0.00	0.47	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	5274	1585	0	5274	1585				1781	0	1585
Grp Volume(v), veh/h	0	760	0	0	2180	0				150	0	600
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585				1781	0	1585
Q Serve(g_s), s	0.0	8.1	0.0	0.0	34.5	0.0				4.9	0.0	32.4
Cycle Q Clear(g_c), s	0.0	8.1	0.0	0.0	34.5	0.0				4.9	0.0	32.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2423		0	2423					706	0	628
V/C Ratio(X)	0.00	0.31		0.00	0.90					0.21	0.00	0.96
Avail Cap(c_a), veh/h	0	2472		0	2472					725	0	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.3	0.0	0.0	21.3	0.0				17.5	0.0	25.9
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	4.9	0.0				0.1	0.0	24.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.6	0.0	0.0	12.3	0.0				1.9	0.0	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	14.4	0.0	0.0	26.2	0.0				17.7	0.0	50.4
LnGrp LOS	A	B		A	C					B	A	D
Approach Vol, veh/h		760	A		2180	A					750	
Approach Delay, s/veh		14.4			26.2						43.9	
Approach LOS		B			C						D	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				47.7		40.4		47.7				
Change Period (Y+Rc), s				5.9		5.5		5.9				
Max Green Setting (Gmax), s				42.7		35.9		42.7				
Max Q Clear Time (g_c+I1), s				10.1		34.4		36.5				
Green Ext Time (p_c), s				4.9		0.5		5.3				

Intersection Summary	
HCM 6th Ctrl Delay	27.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	400	170	2140	200	1000	530
v/c Ratio	0.19	0.11	1.04	0.13	1.09	0.34
Control Delay	23.1	0.1	66.9	0.2	84.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	0.1	66.9	0.2	84.7	0.6
Queue Length 50th (ft)	71	0	~656	0	~869	0
Queue Length 95th (ft)	96	0	#752	0	#1122	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	2076	1550	2055	1583	921	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.11	1.04	0.13	1.09	0.34

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	400	170	0	2140	200	1000	0	530	0	0	0
Future Volume (veh/h)	0	400	170	0	2140	200	1000	0	530	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	400	0	0	2140	0	1000	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2064		0	2064		928	0				
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.00	0.52	0.00	0.00			
Sat Flow, veh/h	0	5274	1585	0	5274	1585	1781	0	1585			
Grp Volume(v), veh/h	0	400	0	0	2140	0	1000	0	0			
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	6.1	0.0	0.0	48.5	0.0	62.5	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	6.1	0.0	0.0	48.5	0.0	62.5	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2064		0	2064		928	0				
V/C Ratio(X)	0.00	0.19		0.00	1.04		1.08	0.00				
Avail Cap(c_a), veh/h	0	2085		0	2064		928	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	23.1	0.0	0.0	35.8	0.0	28.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	30.1	0.0	52.8	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.3	0.0	0.0	24.0	0.0	38.5	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	23.1	0.0	0.0	65.9	0.0	81.6	0.0	0.0			
LnGrp LOS	A	C		A	F		F	A				
Approach Vol, veh/h		400	A		2140	A		1000	A			
Approach Delay, s/veh		23.1			65.9			81.6				
Approach LOS		C			E			F				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		54.0				54.0		66.0				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		48.5				* 49		62.5				
Max Q Clear Time (g_c+I1), s		50.5				8.1		64.5				
Green Ext Time (p_c), s		0.0				2.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		65.5
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	20	0	1260	0	500	190	0	980	260
Future Vol, veh/h	0	0	0	20	0	1260	0	500	190	0	980	260
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	20	0	1260	0	500	190	0	980	260

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	990	-	-	-	0	-	-	-	0
Stage 1	500	-	-	-	-	-	-	-	-
Stage 2	490	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	258	0	0	0	-	0	0	-	0
Stage 1	608	0	0	0	-	0	0	-	0
Stage 2	582	0	0	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	258	0	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	258	0	-	-	-	-	-	-	-
Stage 1	608	0	-	-	-	-	-	-	-
Stage 2	582	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	258	-	-
HCM Lane V/C Ratio	-	0.078	-	-
HCM Control Delay (s)	-	20.1	0	-
HCM Lane LOS	-	C	A	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection						
Int Delay, s/veh	6.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	340	80	0	340	70	930
Future Vol, veh/h	340	80	0	340	70	930
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	340	80	0	340	70	930

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	240	70	70	0	-	0
Stage 1	70	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	738	992	1530	-	-	0
Stage 1	952	-	-	-	-	0
Stage 2	843	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	738	992	1530	-	-	-
Mov Cap-2 Maneuver	738	-	-	-	-	-
Stage 1	952	-	-	-	-	-
Stage 2	843	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1530	-	738	992	-
HCM Lane V/C Ratio	-	-	0.461	0.081	-
HCM Control Delay (s)	0	-	14	8.9	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	2.4	0.3	-

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	40	20	20	100	20
Future Vol, veh/h	20	40	20	20	100	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	40	20	20	100	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	250	30	0	0	40	0
Stage 1	30	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	739	1044	-	-	1570	-
Stage 1	993	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	692	1044	-	-	1570	-
Mov Cap-2 Maneuver	692	-	-	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	6.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	893	1570	-
HCM Lane V/C Ratio	-	-	0.067	0.064	-
HCM Control Delay (s)	-	-	9.3	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection						
Int Delay, s/veh	4.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	10	30	40	0	30
Future Vol, veh/h	80	10	30	40	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	10	30	40	0	30

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	80	50	0	0	70	0
Stage 1	50	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	922	1018	-	-	1531	-
Stage 1	972	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	922	1018	-	-	1531	-
Mov Cap-2 Maneuver	922	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	993	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	932	1531	-
HCM Lane V/C Ratio	-	-	0.097	-	-
HCM Control Delay (s)	-	-	9.3	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	290	110	30	170	80
Future Vol, veh/h	40	290	110	30	170	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	290	110	30	170	80
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.5	9.2	11.9
HCM LOS	B	A	B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	68%
Vol Thru, %	100%	0%	0%	0%	32%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	30	40	290	250
LT Vol	0	0	40	0	170
Through Vol	110	0	0	0	80
RT Vol	0	30	0	290	0
Lane Flow Rate	110	30	40	290	250
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.172	0.041	0.067	0.391	0.379
Departure Headway (Hd)	5.634	4.926	6.063	4.855	5.456
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	630	718	588	737	655
Service Time	3.422	2.714	3.824	2.616	3.532
HCM Lane V/C Ratio	0.175	0.042	0.068	0.393	0.382
HCM Control Delay	9.6	7.9	9.3	10.7	11.9
HCM Lane LOS	A	A	A	B	B
HCM 95th-tile Q	0.6	0.1	0.2	1.9	1.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	30	180	20	150	50	190	270	90	890
v/c Ratio	0.19	0.07	0.35	0.18	0.39	0.11	0.59	0.14	0.37	0.64
Control Delay	36.6	18.2	5.4	39.5	25.2	0.5	38.4	17.5	33.9	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	18.2	5.4	39.5	25.2	0.5	38.4	17.5	33.9	23.1
Queue Length 50th (ft)	9	8	0	6	44	0	58	20	27	84
Queue Length 95th (ft)	45	29	41	35	106	0	#233	65	96	214
Internal Link Dist (ft)		3313			367			2142		3285
Turn Bay Length (ft)	175		175	175		175	400		400	
Base Capacity (vph)	161	1045	955	112	994	911	326	2013	310	1840
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.03	0.19	0.18	0.15	0.05	0.58	0.13	0.29	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	30	180	20	150	50	190	250	20	90	780	110
Future Volume (veh/h)	30	30	180	20	150	50	190	250	20	90	780	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	30	180	20	150	50	190	250	20	90	780	110
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	341	288	26	266	225	240	1616	127	116	1201	168
Arrive On Green	0.05	0.18	0.18	0.01	0.14	0.14	0.13	0.33	0.33	0.07	0.27	0.27
Sat Flow, veh/h	1781	1870	1580	1781	1870	1578	1781	4825	379	1781	4524	633
Grp Volume(v), veh/h	30	30	180	20	150	50	190	175	95	90	585	305
Grp Sat Flow(s),veh/h/ln	1781	1870	1580	1781	1870	1578	1781	1702	1801	1781	1702	1754
Q Serve(g_s), s	0.9	0.7	5.7	0.6	4.0	1.5	5.6	1.9	2.0	2.7	8.2	8.3
Cycle Q Clear(g_c), s	0.9	0.7	5.7	0.6	4.0	1.5	5.6	1.9	2.0	2.7	8.2	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.36
Lane Grp Cap(c), veh/h	97	341	288	26	266	225	240	1140	603	116	904	466
V/C Ratio(X)	0.31	0.09	0.62	0.78	0.56	0.22	0.79	0.15	0.16	0.77	0.65	0.65
Avail Cap(c_a), veh/h	175	1132	956	122	1077	909	354	1378	729	337	1346	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	18.3	20.3	26.5	21.5	20.5	22.6	12.6	12.6	24.8	17.5	17.6
Incr Delay (d2), s/veh	1.8	0.1	2.2	38.6	1.9	0.5	7.3	0.1	0.1	10.4	0.8	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	2.0	0.5	1.7	0.5	2.4	0.6	0.6	1.3	2.6	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	18.4	22.5	65.0	23.4	21.0	29.8	12.6	12.7	35.2	18.3	19.1
LnGrp LOS	C	B	C	E	C	C	C	B	B	D	B	B
Approach Vol, veh/h		240			220			460			980	
Approach Delay, s/veh		22.5			26.6			19.7			20.1	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	23.9	6.3	14.6	12.8	20.2	8.4	12.5				
Change Period (Y+Rc), s	5.5	5.9	5.5	4.8	5.5	5.9	5.5	4.8				
Max Green Setting (Gmax), s	10.2	21.8	3.7	32.6	10.7	21.3	5.3	31.0				
Max Q Clear Time (g_c+I1), s	4.7	4.0	2.6	7.7	7.6	10.3	2.9	6.0				
Green Ext Time (p_c), s	0.1	1.2	0.0	0.7	0.1	3.8	0.0	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			21.1									
HCM 6th LOS			C									

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	30	10	10	580	1060
v/c Ratio	0.08	0.03	0.04	0.14	0.26
Control Delay	17.0	10.3	27.4	4.5	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	10.3	27.4	4.5	7.2
Queue Length 50th (ft)	4	0	1	0	0
Queue Length 95th (ft)	28	10	21	82	206
Internal Link Dist (ft)	2842			686	2142
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	1454	1285	300	4492	4055
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.03	0.13	0.26

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	10	10	580	990	70
Future Volume (veh/h)	30	10	10	580	990	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	10	10	580	990	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	50	45	14	3097	2056	145
Arrive On Green	0.03	0.03	0.01	0.61	0.42	0.42
Sat Flow, veh/h	1781	1585	1781	5274	5036	344
Grp Volume(v), veh/h	30	10	10	580	692	368
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1808
Q Serve(g_s), s	0.5	0.2	0.2	1.6	4.6	4.6
Cycle Q Clear(g_c), s	0.5	0.2	0.2	1.6	4.6	4.6
Prop In Lane	1.00	1.00	1.00			0.19
Lane Grp Cap(c), veh/h	50	45	14	3097	1437	763
V/C Ratio(X)	0.60	0.22	0.70	0.19	0.48	0.48
Avail Cap(c_a), veh/h	1969	1752	371	7216	3502	1859
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	14.8	15.4	2.7	6.5	6.5
Incr Delay (d2), s/veh	10.9	2.5	47.8	0.0	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.2	0.0	0.5	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.9	17.3	63.2	2.8	6.8	7.0
LnGrp LOS	C	B	E	A	A	A
Approach Vol, veh/h	40			590	1060	
Approach Delay, s/veh	23.7			3.8	6.9	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		24.8		6.4	5.7	19.1
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		44.1		34.5	6.5	32.1
Max Q Clear Time (g_c+I1), s		3.6		2.5	2.2	6.6
Green Ext Time (p_c), s		3.7		0.1	0.0	6.5

Intersection Summary		
HCM 6th Ctrl Delay		6.2
HCM 6th LOS		A

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	70	250	600	840	960
v/c Ratio	0.22	0.52	1.24	0.26	0.69
Control Delay	23.2	7.2	149.4	6.8	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	7.2	149.4	6.8	23.2
Queue Length 50th (ft)	23	0	~265	33	98
Queue Length 95th (ft)	52	45	#720	132	225
Internal Link Dist (ft)	1671			1050	4086
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	999	991	485	3578	1713
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.25	1.24	0.23	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	250	600	840	750	210
Future Volume (veh/h)	70	250	600	840	750	210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	250	600	840	750	210
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	352	313	483	3170	1041	288
Arrive On Green	0.20	0.20	0.27	0.62	0.26	0.26
Sat Flow, veh/h	1781	1585	1781	5274	4140	1100
Grp Volume(v), veh/h	70	250	600	840	642	318
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1667
Q Serve(g_s), s	2.1	9.4	17.0	4.7	10.8	10.9
Cycle Q Clear(g_c), s	2.1	9.4	17.0	4.7	10.8	10.9
Prop In Lane	1.00	1.00	1.00			0.66
Lane Grp Cap(c), veh/h	352	313	483	3170	892	437
V/C Ratio(X)	0.20	0.80	1.24	0.26	0.72	0.73
Avail Cap(c_a), veh/h	994	884	483	3549	1145	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	24.0	22.9	5.4	21.0	21.1
Incr Delay (d2), s/veh	0.3	4.7	125.9	0.0	1.6	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	22.6	0.9	3.7	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.3	28.7	148.8	5.4	22.6	24.6
LnGrp LOS	C	C	F	A	C	C
Approach Vol, veh/h	320			1440	960	
Approach Delay, s/veh	27.1			65.2	23.3	
Approach LOS	C			E	C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		44.8		17.9	22.5	22.3
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		43.6		35.0	17.0	21.1
Max Q Clear Time (g_c+I1), s		6.7		11.4	19.0	12.9
Green Ext Time (p_c), s		5.7		1.0	0.0	3.4

Intersection Summary		
HCM 6th Ctrl Delay		45.9
HCM 6th LOS		D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	10	100	150	450	260	340	60	1140	90	90	1150
v/c Ratio	0.11	0.25	0.41	0.78	0.45	0.49	0.46	0.80	0.16	0.65	0.75
Control Delay	54.4	41.3	4.1	51.8	29.7	5.8	64.0	38.6	0.6	72.8	35.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	41.3	4.1	51.8	29.7	5.8	64.0	38.6	0.6	72.8	35.8
Queue Length 50th (ft)	6	32	0	141	130	5	19	231	0	29	232
Queue Length 95th (ft)	27	55	8	#310	235	72	#56	#435	0	#90	#440
Internal Link Dist (ft)		450			475			2094			1585
Turn Bay Length (ft)	375		375	425		425	400		400	400	
Base Capacity (vph)	109	1190	660	580	825	858	130	1557	614	139	1580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.08	0.23	0.78	0.32	0.40	0.46	0.73	0.15	0.65	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	100	150	450	260	340	60	1140	90	90	1140	10
Future Volume (vph)	10	100	150	450	260	340	60	1140	90	90	1140	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	0.97	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	3185	1406	3090	1676	1405	3090	4577	1405	3090	4570	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	3185	1406	3090	1676	1405	3090	4577	1405	3090	4570	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	100	150	450	260	340	60	1140	90	90	1140	10
RTOR Reduction (vph)	0	0	126	0	0	220	0	0	62	0	1	0
Lane Group Flow (vph)	10	100	24	450	260	120	60	1140	28	90	1149	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	1.1	17.5	17.5	19.4	35.8	35.8	3.4	33.4	33.4	4.7	34.7	
Effective Green, g (s)	1.1	17.5	17.5	19.4	35.8	35.8	3.4	33.4	33.4	4.7	34.7	
Actuated g/C Ratio	0.01	0.16	0.16	0.18	0.33	0.33	0.03	0.31	0.31	0.04	0.32	
Clearance Time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	16	512	226	550	551	462	96	1405	431	133	1457	
v/s Ratio Prot	0.01	0.03		c0.15	c0.16		0.02	0.25		c0.03	c0.25	
v/s Ratio Perm			0.02			0.09			0.02			
v/c Ratio	0.62	0.20	0.11	0.82	0.47	0.26	0.62	0.81	0.06	0.68	0.79	
Uniform Delay, d1	53.6	39.5	39.0	43.0	29.0	26.8	52.1	34.8	26.7	51.3	33.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	57.6	0.2	0.2	9.2	0.6	0.3	12.0	3.7	0.1	12.8	2.9	
Delay (s)	111.2	39.7	39.2	52.2	29.6	27.1	64.1	38.5	26.7	64.1	36.6	
Level of Service	F	D	D	D	C	C	E	D	C	E	D	
Approach Delay (s)		42.2			38.5			38.8			38.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	108.8	Sum of lost time (s)	28.1
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	10	1310	780	240	1240	770
v/c Ratio	0.01	0.94	0.56	0.15	0.62	0.72
Control Delay	13.7	34.8	21.7	0.2	22.1	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	34.8	21.7	0.2	22.1	5.8
Queue Length 50th (ft)	3	349	167	0	191	0
Queue Length 95th (ft)	12	#550	222	0	235	69
Internal Link Dist (ft)			551		2094	
Turn Bay Length (ft)						400
Base Capacity (vph)	851	1408	1601	1583	2300	1120
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.93	0.49	0.15	0.54	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	10	0	1310	0	780	240	0	1240	770
Future Volume (veh/h)	0	0	0	10	0	1310	0	780	240	0	1240	770
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				10	0	1310	0	780	0	0	1240	770
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				802	0	1255	0	1504		0	2162	669
Arrive On Green				0.45	0.00	0.45	0.00	0.42	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1781	0	2790	0	3647	1585	0	5274	1581
Grp Volume(v), veh/h				10	0	1310	0	780	0	0	1240	770
Grp Sat Flow(s),veh/h/ln				1781	0	1395	0	1777	1585	0	1702	1581
Q Serve(g_s), s				0.3	0.0	40.5	0.0	14.6	0.0	0.0	16.6	38.1
Cycle Q Clear(g_c), s				0.3	0.0	40.5	0.0	14.6	0.0	0.0	16.6	38.1
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				802	0	1255	0	1504		0	2162	669
V/C Ratio(X)				0.01	0.00	1.04	0.00	0.52		0.00	0.57	1.15
Avail Cap(c_a), veh/h				802	0	1255	0	1504		0	2162	669
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.7	0.0	24.8	0.0	19.2	0.0	0.0	19.8	26.0
Incr Delay (d2), s/veh				0.0	0.0	37.5	0.0	0.3	0.0	0.0	0.4	84.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	0.0	18.7	0.0	5.3	0.0	0.0	5.7	27.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.7	0.0	62.3	0.0	19.5	0.0	0.0	20.1	110.1
LnGrp LOS				B	A	F	A	B		A	C	F
Approach Vol, veh/h					1320			780	A		2010	
Approach Delay, s/veh					61.9			19.5			54.6	
Approach LOS					E			B			D	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		44.0				44.0		46.0				
Change Period (Y+Rc), s		5.9				5.9		5.5				
Max Green Setting (Gmax), s		38.1				38.1		40.5				
Max Q Clear Time (g_c+I1), s		16.6				40.1		42.5				
Green Ext Time (p_c), s		4.6				0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			50.3
HCM 6th LOS			D

Notes
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	480	70	540	90	60	1190
v/c Ratio	0.65	0.10	0.50	0.16	0.06	0.77
Control Delay	15.2	3.1	14.8	4.7	12.1	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	3.1	14.8	4.7	12.1	3.7
Queue Length 50th (ft)	84	0	52	0	5	0
Queue Length 95th (ft)	194	16	118	25	18	0
Internal Link Dist (ft)			529		551	
Turn Bay Length (ft)						
Base Capacity (vph)	1699	1501	2692	1225	2692	1550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.05	0.20	0.07	0.02	0.77

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	480	0	70	0	0	0	0	540	90	0	60	1190
Future Volume (veh/h)	480	0	70	0	0	0	0	540	90	0	60	1190
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	480	0	70				0	540	90	0	60	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	630	0	561				0	1044	466	0	1044	
Arrive On Green	0.35	0.00	0.35				0.00	0.29	0.29	0.00	0.29	0.00
Sat Flow, veh/h	1781	0	1585				0	3647	1585	0	3647	1585
Grp Volume(v), veh/h	480	0	70				0	540	90	0	60	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	0	1777	1585
Q Serve(g_s), s	7.7	0.0	1.0				0.0	4.1	1.4	0.0	0.4	0.0
Cycle Q Clear(g_c), s	7.7	0.0	1.0				0.0	4.1	1.4	0.0	0.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	630	0	561				0	1044	466	0	1044	
V/C Ratio(X)	0.76	0.00	0.12				0.00	0.52	0.19	0.00	0.06	
Avail Cap(c_a), veh/h	2615	0	2327				0	3415	1523	0	3415	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	9.2	0.0	7.1				0.0	9.5	8.6	0.0	8.2	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.1				0.0	0.4	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.2				0.0	0.8	0.2	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.2	0.0	7.2				0.0	9.9	8.8	0.0	8.2	0.0
LnGrp LOS	B	A	A				A	A	A	A	A	
Approach Vol, veh/h		550						630			60	A
Approach Delay, s/veh		10.7						9.7			8.2	
Approach LOS		B						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		15.4		16.9		15.4						
Change Period (Y+Rc), s		5.9		5.5		5.9						
Max Green Setting (Gmax), s		31.1		47.5		31.1						
Max Q Clear Time (g_c+I1), s		6.1		9.7		2.4						
Green Ext Time (p_c), s		3.4		1.8		0.2						

Intersection Summary			
HCM 6th Ctrl Delay			10.1
HCM 6th LOS			B

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	30	20	10	10
Future Vol, veh/h	20	20	30	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	20	30	20	10	10

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	70	40	0	0	50	0
Stage 1	40	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	934	1031	-	-	1557	-
Stage 1	982	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	928	1031	-	-	1557	-
Mov Cap-2 Maneuver	928	-	-	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	987	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	977	1557	-
HCM Lane V/C Ratio	-	-	0.041	0.006	-
HCM Control Delay (s)	-	-	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	30	10	10	30	10	30
v/c Ratio	0.07	0.03	0.00	0.02	0.03	0.01
Control Delay	14.2	9.1	17.3	4.4	14.4	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	9.1	17.3	4.4	14.4	3.4
Queue Length 50th (ft)	3	0	0	0	1	0
Queue Length 95th (ft)	26	10	9	19	13	6
Internal Link Dist (ft)	4683			3724	1647	
Turn Bay Length (ft)		175	300			175
Base Capacity (vph)	1563	1311	2583	1756	1434	2288
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.00	0.02	0.01	0.01

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	30	10	10	30	10	30
Future Volume (veh/h)	30	10	10	30	10	30
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	10	10	30	10	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	102	86	477	833	53	468
Arrive On Green	0.05	0.05	0.14	0.45	0.03	0.03
Sat Flow, veh/h	1870	1574	3456	1870	1781	2790
Grp Volume(v), veh/h	30	10	10	30	10	30
Grp Sat Flow(s),veh/h/ln	1870	1574	1728	1870	1781	1395
Q Serve(g_s), s	0.3	0.1	0.1	0.2	0.1	0.2
Cycle Q Clear(g_c), s	0.3	0.1	0.1	0.2	0.1	0.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	102	86	477	833	53	468
V/C Ratio(X)	0.30	0.12	0.02	0.04	0.19	0.06
Avail Cap(c_a), veh/h	2591	2180	2625	4486	2173	3788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	9.8	8.1	3.4	10.3	7.6
Incr Delay (d2), s/veh	1.6	0.6	0.0	0.0	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.5	10.4	8.1	3.4	12.0	7.7
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	40			40	40	
Approach Delay, s/veh	11.2			4.6	8.7	
Approach LOS	B			A	A	

Timer - Assigned Phs	1	2	6	8
Phs Duration (G+Y+Rc), s	8.5	7.1	15.6	6.1
Change Period (Y+Rc), s	5.5	5.9	5.9	5.5
Max Green Setting (Gmax), s	16.5	30.1	52.1	26.5
Max Q Clear Time (g_c+I1), s	2.1	2.3	2.2	2.2
Green Ext Time (p_c), s	0.0	0.1	0.1	0.1

Intersection Summary	
HCM 6th Ctrl Delay	8.2
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	60	20	80	20	10	10	20	230	10	10	10
v/c Ratio	0.06	0.11	0.03	0.24	0.02	0.01	0.04	0.05	0.46	0.06	0.03	0.02
Control Delay	28.5	18.1	0.1	22.6	11.2	0.0	25.3	17.6	6.6	28.5	18.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	18.1	0.1	22.6	11.2	0.0	25.3	17.6	6.6	28.5	18.8	0.1
Queue Length 50th (ft)	2	10	0	14	2	0	2	4	0	2	2	0
Queue Length 95th (ft)	21	55	0	80	21	0	20	23	48	21	16	0
Internal Link Dist (ft)		3724			3503			1141			1439	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	162	1125	1026	532	1444	1235	347	1375	1202	162	1223	1095
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.05	0.02	0.15	0.01	0.01	0.03	0.01	0.19	0.06	0.01	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	60	20	80	20	10	10	20	230	10	10	10
Future Volume (veh/h)	10	60	20	80	20	10	10	20	230	10	10	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	60	20	80	20	10	10	20	230	10	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	189	159	100	280	235	14	386	326	14	386	326
Arrive On Green	0.01	0.10	0.10	0.06	0.15	0.15	0.01	0.21	0.21	0.01	0.21	0.21
Sat Flow, veh/h	1781	1870	1569	1781	1870	1574	1781	1870	1577	1781	1870	1577
Grp Volume(v), veh/h	10	60	20	80	20	10	10	20	230	10	10	10
Grp Sat Flow(s),veh/h/ln	1781	1870	1569	1781	1870	1574	1781	1870	1577	1781	1870	1577
Q Serve(g_s), s	0.2	1.1	0.4	1.6	0.3	0.2	0.2	0.3	4.9	0.2	0.2	0.2
Cycle Q Clear(g_c), s	0.2	1.1	0.4	1.6	0.3	0.2	0.2	0.3	4.9	0.2	0.2	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	14	189	159	100	280	235	14	386	326	14	386	326
V/C Ratio(X)	0.71	0.32	0.13	0.80	0.07	0.04	0.71	0.05	0.71	0.71	0.03	0.03
Avail Cap(c_a), veh/h	172	1190	998	564	1602	1349	368	1499	1264	172	1293	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	15.2	14.9	16.9	13.3	13.2	18.0	11.5	13.4	18.0	11.5	11.5
Incr Delay (d2), s/veh	48.7	1.0	0.4	13.3	0.1	0.1	48.7	0.1	2.8	48.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.4	0.1	0.8	0.1	0.1	0.3	0.1	1.3	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.7	16.1	15.2	30.3	13.4	13.3	66.7	11.6	16.2	66.7	11.5	11.5
LnGrp LOS	E	B	B	C	B	B	E	B	B	E	B	B
Approach Vol, veh/h		90			110			260			30	
Approach Delay, s/veh		21.5			25.7			17.8			29.9	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	13.4	7.5	9.6	5.8	13.4	5.8	11.3
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	3.5	29.1	11.5	23.1	7.5	25.1	3.5	31.1
Max Q Clear Time (g_c+I1), s	2.2	6.9	3.6	3.1	2.2	2.2	2.2	2.3
Green Ext Time (p_c), s	0.0	0.8	0.1	0.2	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	370	10	280	160	10	930
v/c Ratio	0.66	0.02	0.47	0.08	0.03	0.77
Control Delay	24.5	9.4	27.8	6.6	19.1	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	9.4	27.8	6.6	19.1	8.1
Queue Length 50th (ft)	98	0	38	8	3	15
Queue Length 95th (ft)	244	10	#120	35	15	74
Internal Link Dist (ft)	3503			1595	3285	
Turn Bay Length (ft)		150	375			
Base Capacity (vph)	1108	933	663	3004	1080	1982
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.01	0.42	0.05	0.01	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	370	10	280	160	10	930
Future Volume (veh/h)	370	10	280	160	10	930
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	370	10	280	160	10	930
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	461	389	388	1573	683	1070
Arrive On Green	0.25	0.25	0.11	0.44	0.38	0.38
Sat Flow, veh/h	1870	1579	3456	3647	1781	2790
Grp Volume(v), veh/h	370	10	280	160	10	930
Grp Sat Flow(s),veh/h/ln	1870	1579	1728	1777	1781	1395
Q Serve(g_s), s	12.2	0.3	5.1	1.7	0.2	20.2
Cycle Q Clear(g_c), s	12.2	0.3	5.1	1.7	0.2	20.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	461	389	388	1573	683	1070
V/C Ratio(X)	0.80	0.03	0.72	0.10	0.01	0.87
Avail Cap(c_a), veh/h	888	749	533	2533	867	1358
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	18.7	28.1	10.7	12.5	18.7
Incr Delay (d2), s/veh	3.3	0.0	3.0	0.0	0.0	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.1	2.0	0.5	0.1	5.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.5	18.8	31.1	10.7	12.5	23.9
LnGrp LOS	C	B	C	B	B	C
Approach Vol, veh/h	380			440	940	
Approach Delay, s/veh	26.3			23.7	23.8	
Approach LOS	C			C	C	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	30.6	12.9	22.0	34.9
Change Period (Y+Rc), s	5.5	5.5	5.9	5.9
Max Green Setting (Gmax), s	31.9	10.1	31.1	46.7
Max Q Clear Time (g_c+I1), s	22.2	7.1	14.2	3.7
Green Ext Time (p_c), s	2.9	0.3	1.7	0.9

Intersection Summary	
HCM 6th Ctrl Delay	24.3
HCM 6th LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1410	10	30	500	10	90
v/c Ratio	0.59	0.01	0.25	0.19	0.04	0.30
Control Delay	11.9	6.9	44.5	4.7	28.1	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	6.9	44.5	4.7	28.1	9.9
Queue Length 50th (ft)	178	1	11	24	3	0
Queue Length 95th (ft)	481	9	#62	103	19	39
Internal Link Dist (ft)	1595			4369	10448	
Turn Bay Length (ft)		150	180			175
Base Capacity (vph)	3440	1498	120	3501	936	868
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.01	0.25	0.14	0.01	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1410	10	30	500	10	90
Future Volume (veh/h)	1410	10	30	500	10	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1410	10	30	500	10	90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2050	913	36	2500	135	120
Arrive On Green	0.58	0.58	0.02	0.70	0.08	0.08
Sat Flow, veh/h	3647	1582	1781	3647	1781	1585
Grp Volume(v), veh/h	1410	10	30	500	10	90
Grp Sat Flow(s),veh/h/ln	1777	1582	1781	1777	1781	1585
Q Serve(g_s), s	14.4	0.1	0.9	2.5	0.3	2.9
Cycle Q Clear(g_c), s	14.4	0.1	0.9	2.5	0.3	2.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2050	913	36	2500	135	120
V/C Ratio(X)	0.69	0.01	0.83	0.20	0.07	0.75
Avail Cap(c_a), veh/h	6678	2973	141	7338	1100	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.7	4.7	25.2	2.6	22.2	23.4
Incr Delay (d2), s/veh	0.4	0.0	35.6	0.0	0.2	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.7	0.1	0.1	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.1	4.7	60.9	2.7	22.4	32.4
LnGrp LOS	A	A	E	A	C	C
Approach Vol, veh/h	1420			530	100	
Approach Delay, s/veh	8.1			6.0	31.4	
Approach LOS	A			A	C	

Timer - Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		9.4	6.5	35.7				42.3
Change Period (Y+Rc), s		5.5	5.5	5.9				5.9
Max Green Setting (Gmax), s		31.9	4.1	97.1				106.7
Max Q Clear Time (g_c+I1), s		4.9	2.9	16.4				4.5
Green Ext Time (p_c), s		0.3	0.0	13.4				3.1

Intersection Summary	
HCM 6th Ctrl Delay	8.7
HCM 6th LOS	A

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1110	300	150	80	80	200
v/c Ratio	0.72	0.19	0.10	0.05	0.19	0.34
Control Delay	13.2	0.3	8.5	0.1	12.9	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	0.3	8.5	0.1	12.9	6.8
Queue Length 50th (ft)	62	0	6	0	11	0
Queue Length 95th (ft)	311	0	41	0	48	33
Internal Link Dist (ft)	4369		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3394	1550	3390	1550	1680	2500
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.19	0.04	0.05	0.05	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1110	300	0	150	80	0	0	0	80	0	200
Future Volume (vph)	0	1110	300	0	150	80	0	0	0	80	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.4	4.0		6.8	4.0				4.4		4.4
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1110	300	0	150	80	0	0	0	80	0	200
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	171
Lane Group Flow (vph)	0	1110	300	0	150	80	0	0	0	80	0	29
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		16.9	40.3		16.5	40.3				12.6		5.9
Effective Green, g (s)		16.9	40.3		16.5	40.3				12.6		5.9
Actuated g/C Ratio		0.42	1.00		0.41	1.00				0.31		0.15
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1484	1550		1448	1550				553		408
v/s Ratio Prot		c0.31			0.04					0.05		0.01
v/s Ratio Perm			c0.19			0.05						
v/c Ratio		0.75	0.19		0.10	0.05				0.14		0.07
Uniform Delay, d1		9.9	0.0		7.3	0.0				10.0		14.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		1.8	0.3		0.0	0.1				0.0		0.0
Delay (s)		11.7	0.3		7.4	0.1				10.0		14.9
Level of Service		B	A		A	A				B		B
Approach Delay (s)		9.3			4.8			0.0			13.5	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	40.3	Sum of lost time (s)	15.6
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	450	700	270	210	79	81	580
v/c Ratio	0.53	0.45	0.35	0.42	0.33	0.33	0.36
Control Delay	17.2	1.0	16.2	6.1	24.1	24.1	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	1.0	16.2	6.1	24.1	24.1	2.1
Queue Length 50th (ft)	40	0	24	0	14	15	4
Queue Length 95th (ft)	125	0	78	45	76	77	33
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3452	1550	3444	1499	1451	1463	2730
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.45	0.08	0.14	0.05	0.06	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	450	700	0	270	210	150	10	580	0	0	0
Future Volume (vph)	0	450	700	0	270	210	150	10	580	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.0		5.8	5.8	5.5	5.5	5.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1550		3539	1547	1681	1695	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1550		3539	1547	1681	1695	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	450	700	0	270	210	150	10	580	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	162	0	0	248	0	0	0
Lane Group Flow (vph)	0	450	700	0	270	48	79	81	332	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		10.4	41.3		9.5	9.5	6.2	6.2	20.5			
Effective Green, g (s)		10.4	41.3		9.5	9.5	6.2	6.2	20.5			
Actuated g/C Ratio		0.25	1.00		0.23	0.23	0.15	0.15	0.50			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		891	1550		814	355	252	254	1383			
v/s Ratio Prot		0.13			0.08		0.05	0.05	0.12			
v/s Ratio Perm			c0.45			0.03						
v/c Ratio		0.51	0.45		0.33	0.14	0.31	0.32	0.24			
Uniform Delay, d1		13.2	0.0		13.3	12.6	15.7	15.7	5.9			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	1.0		0.1	0.1	0.3	0.3	0.1			
Delay (s)		13.4	1.0		13.3	12.7	15.9	15.9	6.0			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		5.8			13.1			8.2			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	41.3	Sum of lost time (s)	16.8
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	50	800	310	130	600	10	120	190	360	10	90	60
v/c Ratio	0.33	0.71	0.44	0.57	0.38	0.01	0.58	0.36	0.58	0.13	0.31	0.16
Control Delay	44.3	27.5	5.2	46.7	18.0	0.0	50.0	23.9	12.2	45.3	32.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	27.5	5.2	46.7	18.0	0.0	50.0	23.9	12.2	45.3	32.2	0.9
Queue Length 50th (ft)	22	164	0	56	105	0	53	66	39	5	38	0
Queue Length 95th (ft)	#70	305	59	#179	207	0	#179	148	138	24	84	0
Internal Link Dist (ft)		745			1992			1063			3284	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	156	1624	876	246	1806	862	207	889	873	79	757	724
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.49	0.35	0.53	0.33	0.01	0.58	0.21	0.41	0.13	0.12	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	800	310	130	600	10	120	190	360	10	90	60
Future Volume (veh/h)	50	800	310	130	600	10	120	190	360	10	90	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	50	800	0	130	600	0	120	190	360	10	90	60
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	1043		179	1274		153	513	434	13	367	310
Arrive On Green	0.04	0.29	0.00	0.10	0.36	0.00	0.09	0.27	0.27	0.01	0.20	0.20
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1582	1781	1870	1580
Grp Volume(v), veh/h	50	800	0	130	600	0	120	190	360	10	90	60
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1582	1781	1870	1580
Q Serve(g_s), s	2.0	14.4	0.0	5.0	9.2	0.0	4.6	5.8	15.0	0.4	2.9	2.2
Cycle Q Clear(g_c), s	2.0	14.4	0.0	5.0	9.2	0.0	4.6	5.8	15.0	0.4	2.9	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	63	1043		179	1274		153	513	434	13	367	310
V/C Ratio(X)	0.80	0.77		0.73	0.47		0.78	0.37	0.83	0.74	0.25	0.19
Avail Cap(c_a), veh/h	155	1597		243	1774		203	875	740	79	745	629
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	22.6	0.0	30.7	17.4	0.0	31.5	20.6	24.0	34.8	23.9	23.6
Incr Delay (d2), s/veh	20.0	1.2	0.0	6.9	0.3	0.0	13.6	0.4	4.1	55.9	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	5.2	0.0	2.2	3.1	0.0	2.4	2.2	5.2	0.4	1.1	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.7	23.9	0.0	37.6	17.7	0.0	45.1	21.0	28.1	90.7	24.2	23.9
LnGrp LOS	D	C		D	B		D	C	C	F	C	C
Approach Vol, veh/h		850	A		730	A		670			160	
Approach Delay, s/veh		25.6			21.2			29.1			28.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	25.2	12.5	26.5	11.5	19.7	8.0	31.1
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	3.1	32.9	9.6	31.6	8.0	28.0	6.1	35.1
Max Q Clear Time (g_c+I1), s	2.4	17.0	7.0	16.4	6.6	4.9	4.0	11.2
Green Ext Time (p_c), s	0.0	1.9	0.1	4.2	0.0	0.5	0.0	3.5

Intersection Summary	
HCM 6th Ctrl Delay	25.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	280	980	20	220	820	120	10	820	200	270	1160	180
v/c Ratio	0.59	0.68	0.04	0.53	0.61	0.23	0.09	0.63	0.37	0.78	0.57	0.25
Control Delay	48.0	34.2	0.1	48.8	34.0	3.0	57.7	35.3	6.5	62.6	25.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.0	34.2	0.1	48.8	34.0	3.0	57.7	35.3	6.5	62.6	25.6	4.7
Queue Length 50th (ft)	81	190	0	64	157	0	3	160	0	82	189	0
Queue Length 95th (ft)	169	305	0	138	257	21	14	257	56	#229	354	49
Internal Link Dist (ft)		1627			1756			1585			1050	
Turn Bay Length (ft)	450		450	400		400	400		400	400		400
Base Capacity (vph)	636	2396	818	545	2262	781	109	2326	822	345	2676	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.41	0.02	0.40	0.36	0.15	0.09	0.35	0.24	0.78	0.43	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	980	20	220	820	120	10	820	200	270	1160	180
Future Volume (veh/h)	280	980	20	220	820	120	10	820	200	270	1160	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	280	980	20	220	820	120	10	820	200	270	1160	180
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	1450	449	311	1351	418	26	1287	399	350	1766	547
Arrive On Green	0.11	0.28	0.28	0.09	0.26	0.26	0.01	0.25	0.25	0.10	0.35	0.35
Sat Flow, veh/h	3456	5106	1582	3456	5106	1581	3456	5106	1581	3456	5106	1582
Grp Volume(v), veh/h	280	980	20	220	820	120	10	820	200	270	1160	180
Grp Sat Flow(s),veh/h/ln	1728	1702	1582	1728	1702	1581	1728	1702	1581	1728	1702	1582
Q Serve(g_s), s	6.6	14.2	0.8	5.2	11.8	5.0	0.2	12.0	9.1	6.4	16.1	7.0
Cycle Q Clear(g_c), s	6.6	14.2	0.8	5.2	11.8	5.0	0.2	12.0	9.1	6.4	16.1	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	378	1450	449	311	1351	418	26	1287	399	350	1766	547
V/C Ratio(X)	0.74	0.68	0.04	0.71	0.61	0.29	0.39	0.64	0.50	0.77	0.66	0.33
Avail Cap(c_a), veh/h	724	2719	842	620	2566	795	124	2639	817	393	3036	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.1	26.5	21.7	37.0	26.9	24.5	41.3	27.9	26.8	36.6	23.1	20.2
Incr Delay (d2), s/veh	2.9	0.6	0.0	3.0	0.4	0.4	9.3	0.5	1.0	8.2	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	5.2	0.3	2.1	4.3	1.7	0.1	4.4	3.2	2.9	5.7	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	27.1	21.7	39.9	27.4	24.8	50.6	28.4	27.7	44.9	23.6	20.5
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1280			1160			1030			1610	
Approach Delay, s/veh		29.6			29.5			28.5			26.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	27.0	13.0	29.6	6.1	34.8	14.6	28.0
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	9.5	43.2	15.0	44.5	3.0	49.7	17.5	42.0
Max Q Clear Time (g_c+I1), s	8.4	14.0	7.2	16.2	2.2	18.1	8.6	13.8
Green Ext Time (p_c), s	0.1	6.1	0.4	6.6	0.0	9.2	0.6	5.7

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	1650	20	30	1090	240	20	20	60	570	30	100
v/c Ratio	0.73	0.87	0.03	0.67	0.68	0.37	0.19	0.11	0.21	0.92	0.04	0.14
Control Delay	88.7	41.3	0.1	116.5	39.1	6.2	61.5	48.8	1.8	59.1	21.6	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.7	41.3	0.1	116.5	39.1	6.2	61.5	48.8	1.8	59.1	21.6	4.3
Queue Length 50th (ft)	67	412	0	23	252	0	14	14	0	403	12	0
Queue Length 95th (ft)	#198	#728	0	#96	409	68	47	37	0	#856	35	31
Internal Link Dist (ft)		760			4518			633			10448	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	123	1905	665	45	1684	670	201	585	590	622	1036	914
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.87	0.03	0.67	0.65	0.36	0.10	0.03	0.10	0.92	0.03	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1650	20	30	1090	240	20	20	60	570	30	100
Future Volume (veh/h)	90	1650	20	30	1090	240	20	20	60	570	30	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	1650	20	30	1090	240	20	20	60	570	30	100
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	1883	583	37	1665	515	24	136	114	601	741	627
Arrive On Green	0.06	0.37	0.37	0.02	0.33	0.33	0.01	0.07	0.07	0.34	0.40	0.40
Sat Flow, veh/h	1781	5106	1581	1781	5106	1580	1781	1870	1572	1781	1870	1583
Grp Volume(v), veh/h	90	1650	20	30	1090	240	20	20	60	570	30	100
Grp Sat Flow(s),veh/h/ln	1781	1702	1581	1781	1702	1580	1781	1870	1572	1781	1870	1583
Q Serve(g_s), s	5.5	33.4	0.9	1.9	20.3	13.4	1.2	1.1	4.1	34.6	1.1	4.5
Cycle Q Clear(g_c), s	5.5	33.4	0.9	1.9	20.3	13.4	1.2	1.1	4.1	34.6	1.1	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	113	1883	583	37	1665	515	24	136	114	601	741	627
V/C Ratio(X)	0.79	0.88	0.03	0.80	0.65	0.47	0.83	0.15	0.52	0.95	0.04	0.16
Avail Cap(c_a), veh/h	129	1986	615	48	1756	543	211	611	514	651	1074	909
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	32.6	22.4	54.0	32.0	29.7	54.5	48.1	49.5	35.8	20.5	21.5
Incr Delay (d2), s/veh	25.3	4.6	0.0	50.7	0.8	0.7	48.8	0.5	3.7	22.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	13.3	0.3	1.3	7.8	4.8	0.9	0.5	1.6	17.9	0.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.5	37.2	22.4	104.7	32.8	30.3	103.3	48.6	53.2	58.4	20.5	21.7
LnGrp LOS	E	D	C	F	C	C	F	D	D	E	C	C
Approach Vol, veh/h		1760			1360			100			700	
Approach Delay, s/veh		39.0			34.0			62.3			51.6	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	42.8	13.4	7.8	46.8	7.0	49.2	12.6	42.0
Change Period (Y+Rc), s	5.5	5.3	5.5	5.9	5.5	5.3	5.5	5.9
Max Green Setting (Gmax), s	40.5	36.2	3.0	43.1	13.1	63.6	8.0	38.1
Max Q Clear Time (g_c+I1), s	36.6	6.1	3.9	35.4	3.2	6.5	7.5	22.3
Green Ext Time (p_c), s	0.8	0.2	0.0	5.5	0.0	0.5	0.0	6.8

Intersection Summary			
HCM 6th Ctrl Delay			40.1
HCM 6th LOS			D

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	2250	1210	1280	360	160	370
v/c Ratio	0.79	0.90	0.45	0.35	0.31	0.78
Control Delay	17.4	13.4	11.5	3.8	22.2	34.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	13.4	11.5	3.8	22.2	34.4
Queue Length 50th (ft)	275	24	116	13	59	145
Queue Length 95th (ft)	#508	#554	216	69	103	237
Internal Link Dist (ft)	4518		937			
Turn Bay Length (ft)		400		100		440
Base Capacity (vph)	2861	1346	2861	1018	836	756
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.90	0.45	0.35	0.19	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2250	1210	0	1280	360	0	0	0	160	0	370
Future Volume (veh/h)	0	2250	1210	0	1280	360	0	0	0	160	0	370
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	2250	0	0	1280	0				160	0	370
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2865		0	2865					489	0	435
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	5274	1585	0	5274	1585				1781	0	1585
Grp Volume(v), veh/h	0	2250	0	0	1280	0				160	0	370
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585				1781	0	1585
Q Serve(g_s), s	0.0	23.9	0.0	0.0	10.2	0.0				5.0	0.0	15.3
Cycle Q Clear(g_c), s	0.0	23.9	0.0	0.0	10.2	0.0				5.0	0.0	15.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2865		0	2865					489	0	435
V/C Ratio(X)	0.00	0.79		0.00	0.45					0.33	0.00	0.85
Avail Cap(c_a), veh/h	0	3149		0	3149					924	0	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.9	0.0	0.0	8.9	0.0				20.0	0.0	23.8
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.0	0.1	0.0				0.4	0.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.3	0.0	0.0	2.5	0.0				2.0	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	13.2	0.0	0.0	9.0	0.0				20.4	0.0	28.6
LnGrp LOS	A	B		A	A					C	A	C
Approach Vol, veh/h		2250	A		1280	A					530	
Approach Delay, s/veh		13.2			9.0						26.1	
Approach LOS		B			A						C	
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				44.8		24.5		44.8				
Change Period (Y+Rc), s				5.9		5.5		5.9				
Max Green Setting (Gmax), s				42.7		35.9		42.7				
Max Q Clear Time (g_c+I1), s				25.9		17.3		12.2				
Green Ext Time (p_c), s				12.9		1.7		9.4				
Intersection Summary												
HCM 6th Ctrl Delay			13.6									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1170	370	1180	230	650	890
v/c Ratio	0.58	0.24	0.60	0.15	0.79	0.57
Control Delay	18.0	0.4	18.6	0.2	23.5	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	0.4	18.6	0.2	23.5	1.5
Queue Length 50th (ft)	123	0	127	0	199	0
Queue Length 95th (ft)	247	0	252	0	431	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	3927	1550	3897	1583	1584	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.24	0.30	0.15	0.41	0.57

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1170	370	0	1180	230	650	0	890	0	0	0
Future Volume (veh/h)	0	1170	370	0	1180	230	650	0	890	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	1170	0	0	1180	0	650	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2074		0	2074		722	0				
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00	0.41	0.00	0.00			
Sat Flow, veh/h	0	5274	1585	0	5274	1585	1781	0	1585			
Grp Volume(v), veh/h	0	1170	0	0	1180	0	650	0	0			
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	8.4	0.0	0.0	8.5	0.0	16.3	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	8.4	0.0	0.0	8.5	0.0	16.3	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2074		0	2074		722	0				
V/C Ratio(X)	0.00	0.56		0.00	0.57		0.90	0.00				
Avail Cap(c_a), veh/h	0	5241		0	5188		2332	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	10.9	0.0	0.0	10.9	0.0	13.3	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	1.7	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.0	0.0	0.0	2.0	0.0	5.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.1	0.0	0.0	11.2	0.0	15.0	0.0	0.0			
LnGrp LOS	A	B		A	B		B	A				
Approach Vol, veh/h		1170	A		1180	A		650	A			
Approach Delay, s/veh		11.1			11.2			15.0				
Approach LOS		B			B			B				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		24.9				24.9		22.8				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		48.5				* 49		62.5				
Max Q Clear Time (g_c+I1), s		10.5				10.4		18.3				
Green Ext Time (p_c), s		8.9				6.9		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			12.0									
HCM 6th LOS			B									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	20	0	1260	0	440	100	0	1820	410
Future Vol, veh/h	0	0	0	20	0	1260	0	440	100	0	1820	410
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	20	0	1260	0	440	100	0	1820	410

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1350	-	-	-	0	-	-	-	0
Stage 1	440	-	-	-	-	-	-	-	-
Stage 2	910	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	153	0	0	0	-	0	0	-	0
Stage 1	648	0	0	0	-	0	0	-	0
Stage 2	354	0	0	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	153	0	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	153	0	-	-	-	-	-	-	-
Stage 1	648	0	-	-	-	-	-	-	-
Stage 2	354	0	-	-	-	-	-	-	-

Approach	WB			NB			SB
HCM Control Delay, s	32			0			0
HCM LOS	D						

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	153	-	-
HCM Lane V/C Ratio	-	0.131	-	-
HCM Control Delay (s)	-	32	0	-
HCM Lane LOS	-	D	A	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	56.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	300	690	10	240	490	1400
Future Vol, veh/h	300	690	10	240	490	1400
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	690	10	240	490	1400

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	630	490	490	0	-	0
Stage 1	490	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	429	~ 577	1071	-	-	0
Stage 1	615	-	-	-	-	0
Stage 2	873	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	424	~ 577	1071	-	-	-
Mov Cap-2 Maneuver	424	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	873	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	98.9	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1071	-	424	577	-
HCM Lane V/C Ratio	0.009	-	0.708	1.196	-
HCM Control Delay (s)	8.4	0	31.6	128.1	-
HCM Lane LOS	A	A	D	F	-
HCM 95th %tile Q(veh)	0	-	5.4	24.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	90	30	30	60	20
Future Vol, veh/h	30	90	30	30	60	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	90	30	30	60	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	185	45	0	0	60	0
Stage 1	45	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	804	1025	-	-	1544	-
Stage 1	977	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	773	1025	-	-	1544	-
Mov Cap-2 Maneuver	773	-	-	-	-	-
Stage 1	977	-	-	-	-	-
Stage 2	852	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	5.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	948	1544	-
HCM Lane V/C Ratio	-	-	0.127	0.039	-
HCM Control Delay (s)	-	-	9.3	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	10	50	90	0	40
Future Vol, veh/h	50	10	50	90	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	10	50	90	0	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	135	95	0	0	140	0
Stage 1	95	-	-	-	-	-
Stage 2	40	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	859	962	-	-	1443	-
Stage 1	929	-	-	-	-	-
Stage 2	982	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	859	962	-	-	1443	-
Mov Cap-2 Maneuver	859	-	-	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	982	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	875	1443	-
HCM Lane V/C Ratio	-	-	0.069	-	-
HCM Control Delay (s)	-	-	9.4	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Intersection Delay, s/veh	14.9
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	220	170	50	340	100
Future Vol, veh/h	20	220	170	50	340	100
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	220	170	50	340	100
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	11.1	10.1	19.3
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	77%
Vol Thru, %	100%	0%	0%	0%	23%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	170	50	20	220	440
LT Vol	0	0	20	0	340
Through Vol	170	0	0	0	100
RT Vol	0	50	0	220	0
Lane Flow Rate	170	50	20	220	440
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.273	0.07	0.038	0.342	0.676
Departure Headway (Hd)	5.78	5.07	6.811	5.596	5.534
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	622	707	526	642	656
Service Time	3.509	2.8	4.546	3.33	3.534
HCM Lane V/C Ratio	0.273	0.071	0.038	0.343	0.671
HCM Control Delay	10.7	8.2	9.8	11.2	19.3
HCM Lane LOS	B	A	A	B	C
HCM 95th-tile Q	1.1	0.2	0.1	1.5	5.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	160	210	30	60	90	200	840	90	390
v/c Ratio	0.55	0.32	0.37	0.27	0.18	0.22	0.62	0.51	0.37	0.34
Control Delay	48.2	21.7	5.5	41.5	23.8	1.2	39.8	22.0	34.3	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	21.7	5.5	41.5	23.8	1.2	39.8	22.0	34.3	20.9
Queue Length 50th (ft)	32	44	0	11	20	0	68	94	30	38
Queue Length 95th (ft)	#141	109	44	#50	50	1	#247	203	96	90
Internal Link Dist (ft)		3313			367			2142		3285
Turn Bay Length (ft)	175		175	175		175	400		400	
Base Capacity (vph)	165	1038	963	111	987	907	323	1925	308	1829
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.15	0.22	0.27	0.06	0.10	0.62	0.44	0.29	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	160	210	30	60	90	200	820	20	90	340	50
Future Volume (veh/h)	90	160	210	30	60	90	200	820	20	90	340	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	160	210	30	60	90	200	820	20	90	340	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	386	326	37	257	217	254	1354	33	116	841	121
Arrive On Green	0.09	0.21	0.21	0.02	0.14	0.14	0.14	0.26	0.26	0.07	0.19	0.19
Sat Flow, veh/h	1781	1870	1580	1781	1870	1578	1781	5127	125	1781	4508	646
Grp Volume(v), veh/h	90	160	210	30	60	90	200	544	296	90	254	136
Grp Sat Flow(s),veh/h/ln	1781	1870	1580	1781	1870	1578	1781	1702	1847	1781	1702	1750
Q Serve(g_s), s	2.4	3.6	5.9	0.8	1.4	2.6	5.3	6.8	6.9	2.4	3.2	3.3
Cycle Q Clear(g_c), s	2.4	3.6	5.9	0.8	1.4	2.6	5.3	6.8	6.9	2.4	3.2	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.37
Lane Grp Cap(c), veh/h	160	386	326	37	257	217	254	899	488	116	635	327
V/C Ratio(X)	0.56	0.41	0.64	0.82	0.23	0.42	0.79	0.61	0.61	0.78	0.40	0.41
Avail Cap(c_a), veh/h	193	1247	1054	135	1186	1001	390	1518	824	372	1483	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	16.8	17.8	23.9	18.8	19.3	20.2	15.8	15.8	22.5	17.5	17.5
Incr Delay (d2), s/veh	3.1	0.7	2.1	34.1	0.5	1.3	5.9	0.7	1.2	10.6	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.4	2.0	0.7	0.6	0.9	2.1	2.0	2.3	1.2	1.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	17.5	19.9	58.0	19.3	20.6	26.1	16.4	17.0	33.1	17.9	18.4
LnGrp LOS	C	B	B	E	B	C	C	B	B	C	B	B
Approach Vol, veh/h		460			180			1040			480	
Approach Delay, s/veh		20.0			26.4			18.4			20.9	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	18.8	6.5	14.9	12.5	15.0	9.9	11.5
Change Period (Y+Rc), s	5.5	5.9	5.5	4.8	5.5	5.9	5.5	4.8
Max Green Setting (Gmax), s	10.2	21.8	3.7	32.6	10.7	21.3	5.3	31.0
Max Q Clear Time (g_c+I1), s	4.4	8.9	2.8	7.9	7.3	5.3	4.4	4.6
Green Ext Time (p_c), s	0.1	3.8	0.0	1.6	0.2	1.8	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	20.0
HCM 6th LOS	B

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	80	20	10	1070	740
v/c Ratio	0.20	0.06	0.04	0.33	0.24
Control Delay	16.5	7.2	25.1	7.7	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	7.2	25.1	7.7	9.6
Queue Length 50th (ft)	20	0	3	45	28
Queue Length 95th (ft)	48	12	18	161	141
Internal Link Dist (ft)	2842			686	2142
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	1324	1174	261	4557	3573
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.02	0.04	0.23	0.21

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	20	10	1070	690	50
Future Volume (veh/h)	80	20	10	1070	690	50
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	20	10	1070	690	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	120	107	14	2724	1618	117
Arrive On Green	0.07	0.07	0.01	0.53	0.33	0.33
Sat Flow, veh/h	1781	1585	1781	5274	5028	350
Grp Volume(v), veh/h	80	20	10	1070	482	258
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1806
Q Serve(g_s), s	1.3	0.3	0.2	3.5	3.1	3.2
Cycle Q Clear(g_c), s	1.3	0.3	0.2	3.5	3.1	3.2
Prop In Lane	1.00	1.00	1.00			0.19
Lane Grp Cap(c), veh/h	120	107	14	2724	1133	601
V/C Ratio(X)	0.67	0.19	0.70	0.39	0.43	0.43
Avail Cap(c_a), veh/h	2152	1915	405	7885	3826	2030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	12.6	14.1	3.9	7.4	7.4
Incr Delay (d2), s/veh	6.2	0.8	47.2	0.1	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.2	0.0	0.4	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.2	13.4	61.4	4.0	7.7	7.9
LnGrp LOS	B	B	E	A	A	A
Approach Vol, veh/h	100			1080	740	
Approach Delay, s/veh	18.1			4.6	7.7	
Approach LOS	B			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		21.1		7.4	5.7	15.4
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		44.1		34.5	6.5	32.1
Max Q Clear Time (g_c+I1), s		5.5		3.3	2.2	5.2
Green Ext Time (p_c), s		7.8		0.3	0.0	4.3
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	190	640	350	860	1080
v/c Ratio	0.45	0.86	0.82	0.28	0.76
Control Delay	25.7	18.5	47.5	8.8	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	18.5	47.5	8.8	29.3
Queue Length 50th (ft)	73	57	145	56	149
Queue Length 95th (ft)	123	188	#387	135	#297
Internal Link Dist (ft)	1671			1050	4086
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	875	1019	425	3131	1501
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.63	0.82	0.27	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	190	640	350	860	960	120
Future Volume (veh/h)	190	640	350	860	960	120
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	640	350	860	960	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	695	619	338	2465	1065	133
Arrive On Green	0.39	0.39	0.19	0.48	0.23	0.23
Sat Flow, veh/h	1781	1585	1781	5274	4764	573
Grp Volume(v), veh/h	190	640	350	860	710	370
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1764
Q Serve(g_s), s	6.5	35.0	17.0	9.4	18.2	18.3
Cycle Q Clear(g_c), s	6.5	35.0	17.0	9.4	18.2	18.3
Prop In Lane	1.00	1.00	1.00			0.32
Lane Grp Cap(c), veh/h	695	619	338	2465	789	409
V/C Ratio(X)	0.27	1.03	1.04	0.35	0.90	0.90
Avail Cap(c_a), veh/h	695	619	338	2482	801	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	27.3	36.3	14.4	33.4	33.5
Incr Delay (d2), s/veh	0.2	45.4	58.8	0.1	13.1	22.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	32.6	12.3	3.1	8.2	9.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.9	72.8	95.1	14.5	46.6	56.0
LnGrp LOS	B	F	F	B	D	E
Approach Vol, veh/h	830			1210	1080	
Approach Delay, s/veh	60.4			37.8	49.8	
Approach LOS	E			D	D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.2		40.5	22.5	26.7
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		43.6		35.0	17.0	21.1
Max Q Clear Time (g_c+I1), s		11.4		37.0	19.0	20.3
Green Ext Time (p_c), s		5.7		0.0	0.0	0.5

Intersection Summary			
HCM 6th Ctrl Delay			48.0
HCM 6th LOS			D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	20	340	80	120	180	120	90	1090	180	350	1380
v/c Ratio	0.21	0.57	0.18	0.74	0.43	0.23	0.51	0.83	0.32	0.82	0.77
Control Delay	54.9	40.7	0.8	75.7	36.1	1.0	59.8	41.4	3.5	60.3	32.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	40.7	0.8	75.7	36.1	1.0	59.8	41.4	3.5	60.3	32.3
Queue Length 50th (ft)	12	105	0	38	91	0	28	227	0	109	272
Queue Length 95th (ft)	42	147	0	#107	172	0	#70	#409	28	#239	#493
Internal Link Dist (ft)		450			475			2094			1585
Turn Bay Length (ft)	375		375	425		425	400		400	400	
Base Capacity (vph)	96	1204	677	162	620	668	175	1325	566	427	1795
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.28	0.12	0.74	0.29	0.18	0.51	0.82	0.32	0.82	0.77

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	340	80	120	180	120	90	1090	180	350	1360	20
Future Volume (vph)	20	340	80	120	180	120	90	1090	180	350	1360	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	0.97	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	3185	1406	3090	1676	1405	3090	4577	1405	3090	4566	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	3185	1406	3090	1676	1405	3090	4577	1405	3090	4566	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	340	80	120	180	120	90	1090	180	350	1360	20
RTOR Reduction (vph)	0	0	63	0	0	91	0	0	128	0	1	0
Lane Group Flow (vph)	20	340	17	120	180	29	90	1090	52	350	1379	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	2.3	22.5	22.5	5.3	25.5	25.5	4.5	30.3	30.3	14.0	39.8	
Effective Green, g (s)	2.3	22.5	22.5	5.3	25.5	25.5	4.5	30.3	30.3	14.0	39.8	
Actuated g/C Ratio	0.02	0.21	0.21	0.05	0.24	0.24	0.04	0.29	0.29	0.13	0.38	
Clearance Time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	34	677	299	154	403	338	131	1310	402	408	1717	
v/s Ratio Prot	0.01	c0.11		c0.04	c0.11		0.03	0.24		c0.11	c0.30	
v/s Ratio Perm			0.01			0.02			0.04			
v/c Ratio	0.59	0.50	0.06	0.78	0.45	0.09	0.69	0.83	0.13	0.86	0.80	
Uniform Delay, d1	51.3	36.7	33.2	49.7	34.1	31.1	50.0	35.4	28.0	44.9	29.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	23.4	0.6	0.1	21.6	0.8	0.1	13.9	4.7	0.1	16.2	2.8	
Delay (s)	74.7	37.3	33.3	71.3	34.9	31.2	63.9	40.0	28.1	61.1	32.3	
Level of Service	E	D	C	E	C	C	E	D	C	E	C	
Approach Delay (s)		38.3			44.3			40.0			38.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	105.8	Sum of lost time (s)	28.1
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	10	1170	490	120	1630	620
v/c Ratio	0.01	0.87	0.30	0.08	0.70	0.60
Control Delay	14.1	21.8	15.2	0.1	20.1	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	21.8	15.2	0.1	20.1	4.2
Queue Length 50th (ft)	3	205	77	0	228	0
Queue Length 95th (ft)	12	305	133	0	338	61
Internal Link Dist (ft)			551		2094	
Turn Bay Length (ft)						400
Base Capacity (vph)	945	1666	1779	1583	2556	1085
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.70	0.28	0.08	0.64	0.57

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	10	0	1170	0	490	120	0	1630	620
Future Volume (veh/h)	0	0	0	10	0	1170	0	490	120	0	1630	620
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				10	0	1170	0	490	0	0	1630	620
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				790	0	1238	0	1517		0	2180	675
Arrive On Green				0.44	0.00	0.44	0.00	0.43	0.00	0.00	0.43	0.43
Sat Flow, veh/h				1781	0	2790	0	3647	1585	0	5274	1581
Grp Volume(v), veh/h				10	0	1170	0	490	0	0	1630	620
Grp Sat Flow(s),veh/h/ln				1781	0	1395	0	1777	1585	0	1702	1581
Q Serve(g_s), s				0.3	0.0	35.4	0.0	8.1	0.0	0.0	23.7	32.6
Cycle Q Clear(g_c), s				0.3	0.0	35.4	0.0	8.1	0.0	0.0	23.7	32.6
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				790	0	1238	0	1517		0	2180	675
V/C Ratio(X)				0.01	0.00	0.95	0.00	0.32		0.00	0.75	0.92
Avail Cap(c_a), veh/h				819	0	1282	0	1537		0	2208	684
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.7	0.0	23.5	0.0	16.8	0.0	0.0	21.3	23.8
Incr Delay (d2), s/veh				0.0	0.0	13.8	0.0	0.1	0.0	0.0	1.4	17.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	0.0	13.0	0.0	2.9	0.0	0.0	8.3	13.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.7	0.0	37.3	0.0	16.9	0.0	0.0	22.7	41.2
LnGrp LOS				B	A	D	A	B		A	C	D
Approach Vol, veh/h					1180			490	A		2250	
Approach Delay, s/veh					37.1			16.9			27.8	
Approach LOS					D			B			C	
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		43.5				43.5		44.6				
Change Period (Y+Rc), s		5.9				5.9		5.5				
Max Green Setting (Gmax), s		38.1				38.1		40.5				
Max Q Clear Time (g_c+I1), s		10.1				34.6		37.4				
Green Ext Time (p_c), s		2.9				3.0		1.7				
Intersection Summary												
HCM 6th Ctrl Delay			29.2									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	340	180	270	210	170	1470
v/c Ratio	0.51	0.26	0.28	0.36	0.18	0.95
Control Delay	11.6	2.8	11.4	4.4	11.0	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	2.8	11.4	4.4	11.0	17.0
Queue Length 50th (ft)	39	0	17	0	11	0
Queue Length 95th (ft)	122	26	55	36	37	#165
Internal Link Dist (ft)			529		551	
Turn Bay Length (ft)						
Base Capacity (vph)	1725	1526	3195	1449	3195	1550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.12	0.08	0.14	0.05	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	0	180	0	0	0	0	270	210	0	170	1470
Future Volume (veh/h)	340	0	180	0	0	0	0	270	210	0	170	1470
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	340	0	180				0	270	210	0	170	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	532	0	473				0	955	426	0	955	
Arrive On Green	0.30	0.00	0.30				0.00	0.27	0.27	0.00	0.27	0.00
Sat Flow, veh/h	1781	0	1585				0	3647	1585	0	3647	1585
Grp Volume(v), veh/h	340	0	180				0	270	210	0	170	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	0	1777	1585
Q Serve(g_s), s	4.4	0.0	2.4				0.0	1.6	2.9	0.0	1.0	0.0
Cycle Q Clear(g_c), s	4.4	0.0	2.4				0.0	1.6	2.9	0.0	1.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	532	0	473				0	955	426	0	955	
V/C Ratio(X)	0.64	0.00	0.38				0.00	0.28	0.49	0.00	0.18	
Avail Cap(c_a), veh/h	3213	0	2859				0	4196	1872	0	4196	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	8.0	0.0	7.3				0.0	7.6	8.1	0.0	7.4	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.5				0.0	0.2	0.9	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.5				0.0	0.2	0.4	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.3	0.0	7.8				0.0	7.8	9.0	0.0	7.5	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	
Approach Vol, veh/h		520						480			170	A
Approach Delay, s/veh		8.8						8.3			7.5	
Approach LOS		A						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		13.0		13.4		13.0						
Change Period (Y+Rc), s		5.9		5.5		5.9						
Max Green Setting (Gmax), s		31.1		47.5		31.1						
Max Q Clear Time (g_c+I1), s		4.9		6.4		3.0						
Green Ext Time (p_c), s		2.1		1.7		0.9						

Intersection Summary			
HCM 6th Ctrl Delay			8.4
HCM 6th LOS			A

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	640	120	200	1300	50	170	120	150	10	80	40
v/c Ratio	0.67	0.46	0.17	0.95	0.84	0.07	0.97	0.25	0.29	0.15	0.31	0.12
Control Delay	66.0	21.7	2.9	90.4	29.0	0.2	101.9	25.0	5.7	47.8	34.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	21.7	2.9	90.4	29.0	0.2	101.9	25.0	5.7	47.8	34.6	0.7
Queue Length 50th (ft)	45	123	0	102	298	0	87	47	0	5	38	0
Queue Length 95th (ft)	#149	236	24	#295	#610	0	#264	98	42	24	75	0
Internal Link Dist (ft)		745			1992			1063			3284	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	134	1392	699	211	1546	760	176	763	729	68	649	643
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.46	0.17	0.95	0.84	0.07	0.97	0.16	0.21	0.15	0.12	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	640	120	200	1300	50	170	120	150	10	80	40
Future Volume (veh/h)	90	640	120	200	1300	50	170	120	150	10	80	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	640	0	200	1300	0	170	120	150	10	80	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	115	1284		234	1520		195	352	297	13	161	136
Arrive On Green	0.06	0.36	0.00	0.13	0.43	0.00	0.11	0.19	0.19	0.01	0.09	0.09
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1580	1781	1870	1574
Grp Volume(v), veh/h	90	640	0	200	1300	0	170	120	150	10	80	40
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1580	1781	1870	1574
Q Serve(g_s), s	3.6	10.3	0.0	8.0	24.1	0.0	6.9	4.1	6.2	0.4	3.0	1.7
Cycle Q Clear(g_c), s	3.6	10.3	0.0	8.0	24.1	0.0	6.9	4.1	6.2	0.4	3.0	1.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	115	1284		234	1520		195	352	297	13	161	136
V/C Ratio(X)	0.78	0.50		0.86	0.86		0.87	0.34	0.50	0.74	0.50	0.29
Avail Cap(c_a), veh/h	149	1536		234	1706		195	841	711	76	716	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	18.2	0.0	31.1	18.9	0.0	32.1	25.8	26.6	36.2	31.9	31.3
Incr Delay (d2), s/veh	17.9	0.3	0.0	25.3	4.1	0.0	32.3	0.6	1.3	56.5	2.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.6	0.0	4.7	8.7	0.0	4.4	1.7	2.2	0.4	1.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.5	18.5	0.0	56.4	23.0	0.0	64.4	26.3	28.0	92.7	34.2	32.5
LnGrp LOS	D	B		E	C		E	C	C	F	C	C
Approach Vol, veh/h		730	A		1500	A		440			130	
Approach Delay, s/veh		22.6			27.5			41.6			38.2	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	19.7	15.1	32.3	13.5	12.2	10.2	37.2				
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9				
Max Green Setting (Gmax), s	3.1	32.9	9.6	31.6	8.0	28.0	6.1	35.1				
Max Q Clear Time (g_c+I1), s	2.4	8.2	10.0	12.3	8.9	5.0	5.6	26.1				
Green Ext Time (p_c), s	0.0	1.0	0.0	3.6	0.0	0.4	0.0	5.1				
Intersection Summary												
HCM 6th Ctrl Delay			28.9									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	160	510	10	280	1390	280	10	1030	150	70	760	510
v/c Ratio	0.47	0.31	0.02	0.65	0.77	0.43	0.10	0.71	0.27	0.28	0.41	0.67
Control Delay	54.7	29.4	0.0	56.3	36.5	15.5	62.2	38.5	5.7	56.8	26.5	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	29.4	0.0	56.3	36.5	15.5	62.2	38.5	5.7	56.8	26.5	16.0
Queue Length 50th (ft)	58	102	0	102	326	62	3	254	0	25	145	117
Queue Length 95th (ft)	103	153	0	169	465	163	14	323	44	55	212	276
Internal Link Dist (ft)		1627			1756			1585			1050	
Turn Bay Length (ft)	450		450	400		400	400		400	400		400
Base Capacity (vph)	579	2181	759	496	2062	726	99	2117	741	314	2436	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.23	0.01	0.56	0.67	0.39	0.10	0.49	0.20	0.22	0.31	0.56

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	510	10	280	1390	280	10	1030	150	70	760	510
Future Volume (veh/h)	160	510	10	280	1390	280	10	1030	150	70	760	510
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	510	10	280	1390	280	10	1030	150	70	760	510
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	1564	485	350	1743	540	25	1764	547	118	1902	590
Arrive On Green	0.07	0.31	0.31	0.10	0.34	0.34	0.01	0.35	0.35	0.03	0.37	0.37
Sat Flow, veh/h	3456	5106	1582	3456	5106	1582	3456	5106	1582	3456	5106	1582
Grp Volume(v), veh/h	160	510	10	280	1390	280	10	1030	150	70	760	510
Grp Sat Flow(s),veh/h/ln	1728	1702	1582	1728	1702	1582	1728	1702	1582	1728	1702	1582
Q Serve(g_s), s	4.9	8.3	0.5	8.5	26.4	15.2	0.3	17.7	7.4	2.1	11.8	32.0
Cycle Q Clear(g_c), s	4.9	8.3	0.5	8.5	26.4	15.2	0.3	17.7	7.4	2.1	11.8	32.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	1564	485	350	1743	540	25	1764	547	118	1902	590
V/C Ratio(X)	0.70	0.33	0.02	0.80	0.80	0.52	0.40	0.58	0.27	0.59	0.40	0.87
Avail Cap(c_a), veh/h	564	2119	656	483	2000	620	97	2057	637	306	2366	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.0	28.7	26.0	47.1	32.0	28.3	53.0	28.8	25.4	51.0	24.8	31.2
Incr Delay (d2), s/veh	3.8	0.1	0.0	6.5	2.1	0.8	10.1	0.3	0.3	4.6	0.1	8.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	3.2	0.2	3.8	10.3	5.4	0.2	6.7	2.6	1.0	4.4	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.8	28.8	26.0	53.6	34.0	29.0	63.1	29.1	25.6	55.7	24.9	40.1
LnGrp LOS	D	C	C	D	C	C	E	C	C	E	C	D
Approach Vol, veh/h		680			1950			1190			1340	
Approach Delay, s/veh		34.4			36.1			28.9			32.3	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	43.0	16.4	38.8	6.3	45.9	12.6	42.5				
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9				
Max Green Setting (Gmax), s	9.5	43.2	15.0	44.5	3.0	49.7	17.5	42.0				
Max Q Clear Time (g_c+I1), s	4.1	19.7	10.5	10.3	2.3	34.0	6.9	28.4				
Green Ext Time (p_c), s	0.1	7.2	0.4	3.2	0.0	5.8	0.3	7.8				
Intersection Summary												
HCM 6th Ctrl Delay			33.3									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	620	10	60	2290	520	10	30	30	130	20	70
v/c Ratio	0.57	0.25	0.01	1.02	1.03	0.59	0.08	0.14	0.10	0.56	0.04	0.14
Control Delay	59.1	16.6	0.0	170.7	54.8	11.3	48.2	36.7	0.6	48.9	23.6	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.1	16.6	0.0	170.7	54.8	11.3	48.2	36.7	0.6	48.9	23.6	2.2
Queue Length 50th (ft)	48	67	0	34	~493	55	5	16	0	67	8	0
Queue Length 95th (ft)	#165	166	0	#155	#997	254	26	42	0	160	27	13
Internal Link Dist (ft)		760			4518			633			10448	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	158	2512	832	59	2226	874	260	757	720	804	1330	1143
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.25	0.01	1.02	1.03	0.59	0.04	0.04	0.04	0.16	0.02	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	620	10	60	2290	520	10	30	30	130	20	70
Future Volume (veh/h)	90	620	10	60	2290	520	10	30	30	130	20	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	620	10	60	2290	520	10	30	30	130	20	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	2621	812	69	2486	770	13	117	98	178	290	245
Arrive On Green	0.07	0.51	0.51	0.04	0.49	0.49	0.01	0.06	0.06	0.10	0.16	0.16
Sat Flow, veh/h	1781	5106	1582	1781	5106	1582	1781	1870	1570	1781	1870	1579
Grp Volume(v), veh/h	90	620	10	60	2290	520	10	30	30	130	20	70
Grp Sat Flow(s),veh/h/ln	1781	1702	1582	1781	1702	1582	1781	1870	1570	1781	1870	1579
Q Serve(g_s), s	3.9	5.2	0.2	2.6	32.4	19.5	0.4	1.2	1.4	5.5	0.7	3.0
Cycle Q Clear(g_c), s	3.9	5.2	0.2	2.6	32.4	19.5	0.4	1.2	1.4	5.5	0.7	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	116	2621	812	69	2486	770	13	117	98	178	290	245
V/C Ratio(X)	0.78	0.24	0.01	0.87	0.92	0.68	0.75	0.26	0.31	0.73	0.07	0.29
Avail Cap(c_a), veh/h	183	2830	877	69	2501	775	300	871	731	928	1529	1291
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	10.5	9.3	37.2	18.6	15.2	38.5	34.7	34.8	34.0	28.1	29.0
Incr Delay (d2), s/veh	10.6	0.0	0.0	66.7	6.2	2.3	57.6	1.1	1.7	5.6	0.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.5	0.1	2.3	11.3	6.0	0.4	0.5	0.5	2.5	0.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	10.5	9.3	103.9	24.8	17.6	96.1	35.9	36.6	39.6	28.2	29.7
LnGrp LOS	D	B	A	F	C	B	F	D	D	D	C	C
Approach Vol, veh/h		720			2870			70			220	
Approach Delay, s/veh		15.0			25.1			44.8			35.4	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.3	10.2	8.5	45.8	6.1	17.4	10.6	43.8
Change Period (Y+Rc), s	5.5	5.3	5.5	5.9	5.5	5.3	5.5	5.9
Max Green Setting (Gmax), s	40.5	36.2	3.0	43.1	13.1	63.6	8.0	38.1
Max Q Clear Time (g_c+I1), s	7.5	3.4	4.6	7.2	2.4	5.0	5.9	34.4
Green Ext Time (p_c), s	0.3	0.2	0.0	4.0	0.0	0.3	0.0	3.4

Intersection Summary			
HCM 6th Ctrl Delay			24.2
HCM 6th LOS			C

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1020	470	2420	780	370	610
v/c Ratio	0.42	0.48	0.99	0.84	0.53	0.96
Control Delay	15.9	3.2	40.5	21.0	24.2	54.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	3.2	40.5	21.0	24.2	54.4
Queue Length 50th (ft)	134	0	~488	225	156	313
Queue Length 95th (ft)	168	50	#627	#489	241	#538
Internal Link Dist (ft)	4518		937			
Turn Bay Length (ft)		400		100		440
Base Capacity (vph)	2440	985	2440	934	714	651
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.48	0.99	0.84	0.52	0.94

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1020	470	0	2420	780	0	0	0	370	0	610
Future Volume (veh/h)	0	1020	470	0	2420	780	0	0	0	370	0	610
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	1020	0	0	2420	0				370	0	610
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2423		0	2423					710	0	632
Arrive On Green	0.00	0.47	0.00	0.00	0.47	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	5274	1585	0	5274	1585				1781	0	1585
Grp Volume(v), veh/h	0	1020	0	0	2420	0				370	0	610
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585				1781	0	1585
Q Serve(g_s), s	0.0	11.8	0.0	0.0	42.6	0.0				14.2	0.0	33.8
Cycle Q Clear(g_c), s	0.0	11.8	0.0	0.0	42.6	0.0				14.2	0.0	33.8
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2423		0	2423					710	0	632
V/C Ratio(X)	0.00	0.42		0.00	1.00					0.52	0.00	0.97
Avail Cap(c_a), veh/h	0	2423		0	2423					711	0	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.5	0.0	0.0	23.6	0.0				20.5	0.0	26.4
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	17.9	0.0				0.7	0.0	27.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	0.0	0.0	18.0	0.0				5.7	0.0	16.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.6	0.0	0.0	41.6	0.0				21.2	0.0	53.7
LnGrp LOS	A	B		A	D					C	A	D
Approach Vol, veh/h		1020	A		2420	A					980	
Approach Delay, s/veh		15.6			41.6						41.4	
Approach LOS		B			D						D	
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				48.6		41.4		48.6				
Change Period (Y+Rc), s				5.9		5.5		5.9				
Max Green Setting (Gmax), s				42.7		35.9		42.7				
Max Q Clear Time (g_c+I1), s				13.8		35.8		44.6				
Green Ext Time (p_c), s				6.9		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			35.5									
HCM 6th LOS			D									

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	430	370	2380	210	1010	540
v/c Ratio	0.21	0.24	1.16	0.13	1.10	0.35
Control Delay	23.3	0.4	110.8	0.2	88.5	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	0.4	110.8	0.2	88.5	0.6
Queue Length 50th (ft)	77	0	~798	0	~885	0
Queue Length 95th (ft)	102	0	#891	0	#1136	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	2076	1550	2055	1583	921	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.24	1.16	0.13	1.10	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	430	370	0	2380	210	1010	0	540	0	0	0
Future Volume (veh/h)	0	430	370	0	2380	210	1010	0	540	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	430	0	0	2380	0	1010	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2064		0	2064		928	0				
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.00	0.52	0.00	0.00			
Sat Flow, veh/h	0	5274	1585	0	5274	1585	1781	0	1585			
Grp Volume(v), veh/h	0	430	0	0	2380	0	1010	0	0			
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	6.6	0.0	0.0	48.5	0.0	62.5	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	6.6	0.0	0.0	48.5	0.0	62.5	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2064		0	2064		928	0				
V/C Ratio(X)	0.00	0.21		0.00	1.15		1.09	0.00				
Avail Cap(c_a), veh/h	0	2085		0	2064		928	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	23.3	0.0	0.0	35.8	0.0	28.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	75.0	0.0	56.7	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.5	0.0	0.0	32.6	0.0	39.5	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	23.3	0.0	0.0	110.8	0.0	85.4	0.0	0.0			
LnGrp LOS	A	C		A	F		F	A				
Approach Vol, veh/h		430	A		2380	A		1010	A			
Approach Delay, s/veh		23.3			110.8			85.4				
Approach LOS		C			F			F				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		54.0				54.0		66.0				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		48.5				* 49		62.5				
Max Q Clear Time (g_c+I1), s		50.5				8.6		64.5				
Green Ext Time (p_c), s		0.0				2.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			94.2
HCM 6th LOS			F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	100	0	2450	0	890	190	0	1760	550
Future Vol, veh/h	0	0	0	100	0	2450	0	890	190	0	1760	550
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	100	0	2450	0	890	190	0	1760	550

Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				1770	-	-	-	0	-	-	-	0
Stage 1				890	-	-	-	-	-	-	-	-
Stage 2				880	-	-	-	-	-	-	-	-
Critical Hdwy				6.63	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1				5.43	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.83	-	-	-	-	-	-	-	-
Follow-up Hdwy				3.519	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver				~ 83	0	0	0	-	0	0	-	0
Stage 1				400	0	0	0	-	0	0	-	0
Stage 2				367	0	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver				~ 83	0	-	-	-	-	-	-	-
Mov Cap-2 Maneuver				~ 83	0	-	-	-	-	-	-	-
Stage 1				400	0	-	-	-	-	-	-	-
Stage 2				367	0	-	-	-	-	-	-	-

Approach				WB			NB			SB		
HCM Control Delay, s				254.6			0			0		
HCM LOS				F								

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	83	-	-
HCM Lane V/C Ratio	-	1.205	-	-
HCM Control Delay (s)	-	254.6	0	-
HCM Lane LOS	-	F	A	-
HCM 95th %tile Q(veh)	-	7.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	47.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	760	80	0	340	100	1710
Future Vol, veh/h	760	80	0	340	100	1710
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	760	80	0	340	100	1710

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	270	100	100	0	-	0
Stage 1	100	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 708	955	1492	-	-	0
Stage 1	923	-	-	-	-	0
Stage 2	843	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 708	955	1492	-	-	-
Mov Cap-2 Maneuver	~ 708	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	843	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	72.3	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1492	-	708	955	-
HCM Lane V/C Ratio	-	-	1.073	0.084	-
HCM Control Delay (s)	0	-	78.9	9.1	-
HCM Lane LOS	A	-	F	A	-
HCM 95th %tile Q(veh)	0	-	20.4	0.3	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	1150	310	130	860	40	130	210	360	10	90	70
v/c Ratio	0.46	0.83	0.39	0.65	0.52	0.05	0.71	0.43	0.63	0.15	0.34	0.20
Control Delay	52.2	31.0	5.0	54.0	20.1	0.1	61.9	27.8	15.3	47.9	35.0	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	31.0	5.0	54.0	20.1	0.1	61.9	27.8	15.3	47.9	35.0	1.3
Queue Length 50th (ft)	30	271	4	64	166	0	66	86	55	5	43	0
Queue Length 95th (ft)	#91	#546	67	#179	314	0	#198	163	153	24	84	0
Internal Link Dist (ft)		745			1992			1063			3284	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	134	1391	787	211	1651	801	182	762	770	68	648	642
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.83	0.39	0.62	0.52	0.05	0.71	0.28	0.47	0.15	0.14	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1150	310	130	860	40	130	210	360	10	90	70
Future Volume (veh/h)	60	1150	310	130	860	40	130	210	360	10	90	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	1150	0	130	860	0	130	210	360	10	90	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	1276		170	1462		162	497	420	13	341	288
Arrive On Green	0.04	0.36	0.00	0.10	0.41	0.00	0.09	0.27	0.27	0.01	0.18	0.18
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1581	1781	1870	1580
Grp Volume(v), veh/h	60	1150	0	130	860	0	130	210	360	10	90	70
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1581	1781	1870	1580
Q Serve(g_s), s	2.8	25.7	0.0	6.0	15.7	0.0	6.0	7.8	18.1	0.5	3.5	3.2
Cycle Q Clear(g_c), s	2.8	25.7	0.0	6.0	15.7	0.0	6.0	7.8	18.1	0.5	3.5	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	77	1276		170	1462		162	497	420	13	341	288
V/C Ratio(X)	0.78	0.90		0.76	0.59		0.80	0.42	0.86	0.76	0.26	0.24
Avail Cap(c_a), veh/h	130	1341		204	1489		170	735	621	66	625	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	25.4	0.0	36.9	19.1	0.0	37.3	25.4	29.2	41.5	29.4	29.3
Incr Delay (d2), s/veh	15.6	8.4	0.0	13.1	0.6	0.0	22.8	0.6	7.8	59.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	10.8	0.0	3.0	5.6	0.0	3.4	3.2	7.0	0.4	1.5	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.2	33.9	0.0	50.0	19.7	0.0	60.1	26.0	37.0	100.5	29.8	29.7
LnGrp LOS	E	C		D	B		E	C	D	F	C	C
Approach Vol, veh/h		1210	A		990	A		700			170	
Approach Delay, s/veh		34.9			23.7			38.0			33.9	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	28.2	13.5	36.0	13.1	21.2	9.1	40.4
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	3.1	32.9	9.6	31.6	8.0	28.0	6.1	35.1
Max Q Clear Time (g_c+I1), s	2.5	20.1	8.0	27.7	8.0	5.5	4.8	17.7
Green Ext Time (p_c), s	0.0	1.9	0.0	2.4	0.0	0.5	0.0	4.8

Intersection Summary			
HCM 6th Ctrl Delay			32.0
HCM 6th LOS			C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	570	1040	20	220	1070	120	10	820	200	280	1160	180
v/c Ratio	1.01	0.60	0.03	0.57	0.73	0.21	0.10	0.66	0.38	0.91	0.61	0.26
Control Delay	85.9	32.2	0.1	53.8	38.4	2.9	60.9	39.7	6.7	84.0	30.0	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.9	32.2	0.1	53.8	38.4	2.9	60.9	39.7	6.7	84.0	30.0	4.9
Queue Length 50th (ft)	~201	212	0	73	237	0	3	184	0	98	226	0
Queue Length 95th (ft)	#439	327	0	138	347	21	14	257	56	#240	354	49
Internal Link Dist (ft)		1627			1756			1585			1050	
Turn Bay Length (ft)	450		450	400		400	400		400	400		400
Base Capacity (vph)	566	2133	745	485	2013	712	96	2071	754	307	2382	826
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.49	0.03	0.45	0.53	0.17	0.10	0.40	0.27	0.91	0.49	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	570	1040	20	220	1070	120	10	820	200	280	1160	180
Future Volume (veh/h)	570	1040	20	220	1070	120	10	820	200	280	1160	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	570	1040	20	220	1070	120	10	820	200	280	1160	180
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	585	1883	584	293	1451	450	25	1194	370	318	1626	504
Arrive On Green	0.17	0.37	0.37	0.08	0.28	0.28	0.01	0.23	0.23	0.09	0.32	0.32
Sat Flow, veh/h	3456	5106	1582	3456	5106	1582	3456	5106	1581	3456	5106	1582
Grp Volume(v), veh/h	570	1040	20	220	1070	120	10	820	200	280	1160	180
Grp Sat Flow(s),veh/h/ln	1728	1702	1582	1728	1702	1582	1728	1702	1581	1728	1702	1582
Q Serve(g_s), s	17.0	16.7	0.8	6.4	19.6	6.1	0.3	15.1	11.5	8.3	20.7	9.0
Cycle Q Clear(g_c), s	17.0	16.7	0.8	6.4	19.6	6.1	0.3	15.1	11.5	8.3	20.7	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	585	1883	584	293	1451	450	25	1194	370	318	1626	504
V/C Ratio(X)	0.97	0.55	0.03	0.75	0.74	0.27	0.40	0.69	0.54	0.88	0.71	0.36
Avail Cap(c_a), veh/h	585	2199	681	502	2075	643	100	2134	661	318	2456	761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	25.9	20.9	46.2	33.5	28.6	51.1	36.1	34.7	46.4	31.1	27.1
Incr Delay (d2), s/veh	30.6	0.3	0.0	3.9	0.8	0.3	10.0	0.7	1.2	23.7	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	6.2	0.3	2.8	7.6	2.2	0.2	5.9	4.2	4.4	7.9	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.3	26.1	20.9	50.1	34.3	29.0	61.0	36.8	36.0	70.1	31.6	27.5
LnGrp LOS	E	C	C	D	C	C	E	D	D	E	C	C
Approach Vol, veh/h		1630			1410			1030			1620	
Approach Delay, s/veh		42.5			36.3			36.9			37.8	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	30.1	14.3	44.0	6.2	38.8	23.0	35.3
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	9.5	43.2	15.0	44.5	3.0	49.7	17.5	42.0
Max Q Clear Time (g_c+I1), s	10.3	17.1	8.4	18.7	2.3	22.7	19.0	21.6
Green Ext Time (p_c), s	0.0	5.9	0.4	7.0	0.0	8.8	0.0	7.0

Intersection Summary	
HCM 6th Ctrl Delay	38.6
HCM 6th LOS	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	1710	20	30	1340	240	20	20	60	570	60	110
v/c Ratio	0.75	0.88	0.03	0.67	0.81	0.36	0.19	0.11	0.22	0.93	0.08	0.15
Control Delay	91.0	41.9	0.1	119.3	42.8	6.1	61.6	48.9	1.8	62.3	21.9	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.0	41.9	0.1	119.3	42.8	6.1	61.6	48.9	1.8	62.3	21.9	4.6
Queue Length 50th (ft)	67	435	0	23	330	0	14	14	0	403	24	0
Queue Length 95th (ft)	#198	#770	0	#96	#571	68	47	37	0	#856	59	34
Internal Link Dist (ft)		760			4518			633			10448	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	120	1947	677	45	1653	663	197	575	582	611	1017	902
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.88	0.03	0.67	0.81	0.36	0.10	0.03	0.10	0.93	0.06	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1710	20	30	1340	240	20	20	60	570	60	110
Future Volume (veh/h)	90	1710	20	30	1340	240	20	20	60	570	60	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	1710	20	30	1340	240	20	20	60	570	60	110
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	1900	588	37	1683	521	24	136	114	599	740	626
Arrive On Green	0.06	0.37	0.37	0.02	0.33	0.33	0.01	0.07	0.07	0.34	0.40	0.40
Sat Flow, veh/h	1781	5106	1581	1781	5106	1580	1781	1870	1572	1781	1870	1583
Grp Volume(v), veh/h	90	1710	20	30	1340	240	20	20	60	570	60	110
Grp Sat Flow(s),veh/h/ln	1781	1702	1581	1781	1702	1580	1781	1870	1572	1781	1870	1583
Q Serve(g_s), s	5.6	35.5	0.9	1.9	26.8	13.5	1.3	1.1	4.1	35.0	2.2	5.1
Cycle Q Clear(g_c), s	5.6	35.5	0.9	1.9	26.8	13.5	1.3	1.1	4.1	35.0	2.2	5.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	113	1900	588	37	1683	521	24	136	114	599	740	626
V/C Ratio(X)	0.79	0.90	0.03	0.80	0.80	0.46	0.83	0.15	0.53	0.95	0.08	0.18
Avail Cap(c_a), veh/h	127	1962	607	48	1734	537	208	603	507	643	1060	897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	33.2	22.4	54.7	34.2	29.7	55.2	48.8	50.2	36.3	21.2	22.0
Incr Delay (d2), s/veh	26.0	6.0	0.0	51.6	2.6	0.6	48.5	0.5	3.7	23.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	14.4	0.3	1.3	10.6	4.9	0.9	0.5	1.7	18.2	1.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.8	39.2	22.4	106.3	36.8	30.4	103.8	49.3	53.9	59.6	21.2	22.2
LnGrp LOS	E	D	C	F	D	C	F	D	D	E	C	C
Approach Vol, veh/h		1820			1610			100			740	
Approach Delay, s/veh		41.0			37.1			63.0			50.9	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	43.2	13.4	7.9	47.7	7.0	49.7	12.6	42.9
Change Period (Y+Rc), s	5.5	5.3	5.5	5.9	5.5	5.3	5.5	5.9
Max Green Setting (Gmax), s	40.5	36.2	3.0	43.1	13.1	63.6	8.0	38.1
Max Q Clear Time (g_c+I1), s	37.0	6.1	3.9	37.5	3.3	7.1	7.6	28.8
Green Ext Time (p_c), s	0.7	0.2	0.0	4.3	0.0	0.7	0.0	5.8

Intersection Summary	
HCM 6th Ctrl Delay	41.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	2350	1220	1310	360	270	600
v/c Ratio	0.96	0.93	0.53	0.40	0.39	0.95
Control Delay	34.0	17.5	17.3	4.9	21.5	52.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	17.5	17.3	4.9	21.5	52.6
Queue Length 50th (ft)	459	40	185	23	106	304
Queue Length 95th (ft)	#596	#568	227	74	171	#526
Internal Link Dist (ft)	4518		937			
Turn Bay Length (ft)		400		100		440
Base Capacity (vph)	2452	1309	2452	910	718	654
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.93	0.53	0.40	0.38	0.92

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2350	1220	0	1310	360	0	0	0	270	0	600
Future Volume (veh/h)	0	2350	1220	0	1310	360	0	0	0	270	0	600
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	2350	0	0	1310	0				270	0	600
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2437		0	2437					704	0	627
Arrive On Green	0.00	0.48	0.00	0.00	0.48	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	5274	1585	0	5274	1585				1781	0	1585
Grp Volume(v), veh/h	0	2350	0	0	1310	0				270	0	600
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585				1781	0	1585
Q Serve(g_s), s	0.0	39.8	0.0	0.0	16.1	0.0				9.7	0.0	32.9
Cycle Q Clear(g_c), s	0.0	39.8	0.0	0.0	16.1	0.0				9.7	0.0	32.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2437		0	2437					704	0	627
V/C Ratio(X)	0.00	0.96		0.00	0.54					0.38	0.00	0.96
Avail Cap(c_a), veh/h	0	2439		0	2439					715	0	637
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	22.6	0.0	0.0	16.4	0.0				19.3	0.0	26.3
Incr Delay (d2), s/veh	0.0	11.1	0.0	0.0	0.2	0.0				0.3	0.0	25.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	15.5	0.0	0.0	5.3	0.0				3.9	0.0	15.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	33.8	0.0	0.0	16.7	0.0				19.6	0.0	51.7
LnGrp LOS	A	C		A	B					B	A	D
Approach Vol, veh/h		2350	A		1310	A					870	
Approach Delay, s/veh		33.8			16.7						41.7	
Approach LOS		C			B						D	
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				48.6		40.8		48.6				
Change Period (Y+Rc), s				5.9		5.5		5.9				
Max Green Setting (Gmax), s				42.7		35.9		42.7				
Max Q Clear Time (g_c+I1), s				41.8		34.9		18.1				
Green Ext Time (p_c), s				0.8		0.4		9.0				
Intersection Summary												
HCM 6th Ctrl Delay			30.3									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1230	390	1210	250	650	900
v/c Ratio	0.61	0.25	0.61	0.16	0.79	0.58
Control Delay	18.6	0.4	18.9	0.2	23.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	0.4	18.9	0.2	23.9	1.6
Queue Length 50th (ft)	134	0	133	0	203	0
Queue Length 95th (ft)	267	0	264	0	438	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	3867	1550	3838	1583	1564	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.25	0.32	0.16	0.42	0.58

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1230	390	0	1210	250	650	0	900	0	0	0
Future Volume (veh/h)	0	1230	390	0	1210	250	650	0	900	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	1230	0	0	1210	0	650	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2101		0	2101		720	0				
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00	0.40	0.00	0.00			
Sat Flow, veh/h	0	5274	1585	0	5274	1585	1781	0	1585			
Grp Volume(v), veh/h	0	1230	0	0	1210	0	650	0	0			
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	9.1	0.0	0.0	8.9	0.0	16.7	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	9.1	0.0	0.0	8.9	0.0	16.7	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2101		0	2101		720	0				
V/C Ratio(X)	0.00	0.59		0.00	0.58		0.90	0.00				
Avail Cap(c_a), veh/h	0	5122		0	5069		2279	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	11.1	0.0	0.0	11.1	0.0	13.6	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.3	0.0	1.8	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.2	0.0	0.0	2.1	0.0	5.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.3	0.0	0.0	11.3	0.0	15.4	0.0	0.0			
LnGrp LOS	A	B		A	B		B	A				
Approach Vol, veh/h		1230	A		1210	A		650	A			
Approach Delay, s/veh		11.3			11.3			15.4				
Approach LOS		B			B			B				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		25.6				25.6		23.3				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		48.5				* 49		62.5				
Max Q Clear Time (g_c+I1), s		10.9				11.1		18.7				
Green Ext Time (p_c), s		9.2				7.4		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			12.2									
HCM 6th LOS			B									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	50	0	2130	0	790	100	0	2980	780
Future Vol, veh/h	0	0	0	50	0	2130	0	790	100	0	2980	780
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	50	0	2130	0	790	100	0	2980	780

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	2280	-	-	-	0	-	-	-	0
Stage 1	790	-	-	-	-	-	-	-	-
Stage 2	1490	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	~ 38	0	0	0	-	0	0	-	0
Stage 1	446	0	0	0	-	0	0	-	0
Stage 2	174	0	0	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	~ 38	0	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	~ 38	0	-	-	-	-	-	-	-
Stage 1	446	0	-	-	-	-	-	-	-
Stage 2	174	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 418.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	38	-	-
HCM Lane V/C Ratio	-	1.316	-	-
HCM Control Delay (s)	-	$ 418.1	0	-
HCM Lane LOS	-	F	A	-
HCM 95th %tile Q(veh)	-	5.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	149.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	680	690	10	240	510	2560
Future Vol, veh/h	680	690	10	240	510	2560
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	680	690	10	240	510	2560

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	650	510	510	0	-	0
Stage 1	510	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 418	~ 562	1053	-	-	0
Stage 1	~ 602	-	-	-	-	0
Stage 2	873	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 413	~ 562	1053	-	-	-
Mov Cap-2 Maneuver	~ 413	-	-	-	-	-
Stage 1	~ 595	-	-	-	-	-
Stage 2	873	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	232.6		0.3		0	
HCM LOS	F					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1053	-	413	562	-
HCM Lane V/C Ratio	0.009	-	1.646	1.228	-
HCM Control Delay (s)	8.5	0	$ 325.4	141.2	-
HCM Lane LOS	A	A	F	F	-
HCM 95th %tile Q(veh)	0	-	39.8	26	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	10	10	10	30
Future Vol, veh/h	30	10	10	10	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	10	10	10	10	30

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	65	15	0	0	20	0
Stage 1	15	-	-	-	-	-
Stage 2	50	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	941	1065	-	-	1596	-
Stage 1	1008	-	-	-	-	-
Stage 2	972	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	935	1065	-	-	1596	-
Mov Cap-2 Maneuver	935	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	966	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	964	1596	-
HCM Lane V/C Ratio	-	-	0.041	0.006	-
HCM Control Delay (s)	-	-	8.9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	20	20	400	30	20	210
v/c Ratio	0.05	0.06	0.15	0.02	0.05	0.09
Control Delay	17.6	9.8	10.7	3.8	17.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	9.8	10.7	3.8	17.6	1.4
Queue Length 50th (ft)	2	0	0	0	2	0
Queue Length 95th (ft)	23	15	144	18	23	15
Internal Link Dist (ft)	4683			3724	1647	
Turn Bay Length (ft)		175	300			175
Base Capacity (vph)	1511	1269	2600	1723	1358	2313
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02	0.15	0.02	0.01	0.09

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	20	20	400	30	20	210
Future Volume (veh/h)	20	20	400	30	20	210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	20	20	400	30	20	210
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	97	81	735	865	228	950
Arrive On Green	0.05	0.05	0.21	0.46	0.13	0.13
Sat Flow, veh/h	1870	1570	3456	1870	1781	2790
Grp Volume(v), veh/h	20	20	400	30	20	210
Grp Sat Flow(s),veh/h/ln	1870	1570	1728	1870	1781	1395
Q Serve(g_s), s	0.3	0.3	2.9	0.2	0.3	1.5
Cycle Q Clear(g_c), s	0.3	0.3	2.9	0.2	0.3	1.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	97	81	735	865	228	950
V/C Ratio(X)	0.21	0.25	0.54	0.03	0.09	0.22
Avail Cap(c_a), veh/h	2024	1699	2050	3503	1697	3251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	12.7	9.7	4.1	10.7	6.5
Incr Delay (d2), s/veh	1.0	1.6	0.6	0.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.5	0.0	0.1	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.7	14.2	10.4	4.1	10.9	6.7
LnGrp LOS	B	B	B	A	B	A
Approach Vol, veh/h	40			430	230	
Approach Delay, s/veh	14.0			9.9	7.0	
Approach LOS	B			A	A	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.4	7.3				18.8		9.1
Change Period (Y+Rc), s	5.5	5.9				5.9		5.5
Max Green Setting (Gmax), s	16.5	30.1				52.1		26.5
Max Q Clear Time (g_c+I1), s	4.9	2.3				2.2		3.5
Green Ext Time (p_c), s	1.1	0.1				0.1		0.8

Intersection Summary	
HCM 6th Ctrl Delay	9.2
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	70	100	230	270	10	30	10	30	10	10	10
v/c Ratio	0.07	0.13	0.17	0.46	0.18	0.01	0.11	0.03	0.06	0.07	0.03	0.02
Control Delay	29.0	18.0	0.6	23.9	8.7	0.0	24.8	17.9	0.3	29.0	19.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	18.0	0.6	23.9	8.7	0.0	24.8	17.9	0.3	29.0	19.5	0.1
Queue Length 50th (ft)	1	9	0	23	0	0	4	1	0	1	1	0
Queue Length 95th (ft)	21	62	0	#259	174	0	41	15	0	21	16	0
Internal Link Dist (ft)		3724			3503			1141			1439	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	153	1069	987	505	1525	1295	330	1347	1182	153	1233	1102
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.07	0.10	0.46	0.18	0.01	0.09	0.01	0.03	0.07	0.01	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	70	100	230	270	10	30	10	30	10	10	10
Future Volume (veh/h)	10	70	100	230	270	10	30	10	30	10	10	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	70	100	230	270	10	30	10	30	10	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	255	215	298	554	468	38	124	104	14	98	82
Arrive On Green	0.01	0.14	0.14	0.17	0.30	0.30	0.02	0.07	0.07	0.01	0.05	0.05
Sat Flow, veh/h	1781	1870	1573	1781	1870	1580	1781	1870	1566	1781	1870	1566
Grp Volume(v), veh/h	10	70	100	230	270	10	30	10	30	10	10	10
Grp Sat Flow(s),veh/h/ln	1781	1870	1573	1781	1870	1580	1781	1870	1566	1781	1870	1566
Q Serve(g_s), s	0.2	1.2	2.1	4.5	4.4	0.2	0.6	0.2	0.7	0.2	0.2	0.2
Cycle Q Clear(g_c), s	0.2	1.2	2.1	4.5	4.4	0.2	0.6	0.2	0.7	0.2	0.2	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	14	255	215	298	554	468	38	124	104	14	98	82
V/C Ratio(X)	0.71	0.27	0.47	0.77	0.49	0.02	0.78	0.08	0.29	0.71	0.10	0.12
Avail Cap(c_a), veh/h	170	1179	991	559	1587	1340	364	1485	1243	170	1281	1072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	14.2	14.6	14.6	10.6	9.1	17.8	16.1	16.3	18.1	16.5	16.6
Incr Delay (d2), s/veh	48.8	0.6	1.6	4.2	0.7	0.0	28.2	0.3	1.5	48.8	0.4	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.4	0.6	1.5	1.1	0.0	0.5	0.1	0.2	0.3	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.0	14.8	16.2	18.8	11.3	9.2	46.1	16.3	17.8	67.0	17.0	17.2
LnGrp LOS	E	B	B	B	B	A	D	B	B	E	B	B
Approach Vol, veh/h		180			510			70			30	
Approach Delay, s/veh		18.4			14.6			29.7			33.7	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	8.3	11.6	10.9	6.3	7.8	5.8	16.7				
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9				
Max Green Setting (Gmax), s	3.5	29.1	11.5	23.1	7.5	25.1	3.5	31.1				
Max Q Clear Time (g_c+I1), s	2.2	2.7	6.5	4.1	2.6	2.2	2.2	6.4				
Green Ext Time (p_c), s	0.0	0.1	0.3	0.5	0.0	0.0	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay			17.6									
HCM 6th LOS			B									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	130	10	1090	580	10	180
v/c Ratio	0.37	0.03	0.77	0.24	0.04	0.36
Control Delay	31.9	16.9	23.3	4.5	33.4	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	16.9	23.3	4.5	33.4	8.1
Queue Length 50th (ft)	41	0	157	28	3	0
Queue Length 95th (ft)	149	15	485	108	22	33
Internal Link Dist (ft)	3503			1595	3285	
Turn Bay Length (ft)		150	375			
Base Capacity (vph)	926	780	2842	3323	812	1343
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.01	0.38	0.17	0.01	0.13

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	130	10	1090	580	10	180
Future Volume (veh/h)	130	10	1090	580	10	180
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	130	10	1090	580	10	180
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	237	199	1415	2317	191	300
Arrive On Green	0.13	0.13	0.41	0.65	0.11	0.11
Sat Flow, veh/h	1870	1573	3456	3647	1781	2790
Grp Volume(v), veh/h	130	10	1090	580	10	180
Grp Sat Flow(s),veh/h/ln	1870	1573	1728	1777	1781	1395
Q Serve(g_s), s	3.1	0.3	12.9	3.2	0.2	2.9
Cycle Q Clear(g_c), s	3.1	0.3	12.9	3.2	0.2	2.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	237	199	1415	2317	191	300
V/C Ratio(X)	0.55	0.05	0.77	0.25	0.05	0.60
Avail Cap(c_a), veh/h	1223	1028	3900	6747	1075	1683
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	18.2	12.1	3.4	19.0	20.2
Incr Delay (d2), s/veh	2.0	0.1	0.9	0.1	0.1	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.1	3.2	0.2	0.1	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.4	18.3	13.0	3.5	19.1	22.1
LnGrp LOS	C	B	B	A	B	C
Approach Vol, veh/h	140			1670	190	
Approach Delay, s/veh	21.2			9.7	22.0	
Approach LOS	C			A	C	

Timer - Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		10.6	24.9	11.9				36.8
Change Period (Y+Rc), s		5.5	5.5	5.9				5.9
Max Green Setting (Gmax), s		28.6	53.5	31.0				90.0
Max Q Clear Time (g_c+I1), s		4.9	14.9	5.1				5.2
Green Ext Time (p_c), s		0.6	4.5	0.6				3.7

Intersection Summary	
HCM 6th Ctrl Delay	11.7
HCM 6th LOS	B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	320	50	120	1590	20	30
v/c Ratio	0.17	0.06	0.85	0.58	0.07	0.11
Control Delay	9.1	3.8	79.6	7.8	24.2	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	3.8	79.6	7.8	24.2	11.0
Queue Length 50th (ft)	27	0	36	123	5	0
Queue Length 95th (ft)	84	18	#242	473	29	22
Internal Link Dist (ft)	1595			3525	10448	
Turn Bay Length (ft)		150	180			175
Base Capacity (vph)	3470	1512	142	3534	1110	979
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.03	0.85	0.45	0.02	0.03

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	320	50	120	1590	20	30
Future Volume (veh/h)	320	50	120	1590	20	30
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	320	50	120	1590	20	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1714	763	153	2482	56	50
Arrive On Green	0.48	0.48	0.09	0.70	0.03	0.03
Sat Flow, veh/h	3647	1582	1781	3647	1781	1585
Grp Volume(v), veh/h	320	50	120	1590	20	30
Grp Sat Flow(s),veh/h/ln	1777	1582	1781	1777	1781	1585
Q Serve(g_s), s	2.2	0.7	2.8	10.3	0.5	0.8
Cycle Q Clear(g_c), s	2.2	0.7	2.8	10.3	0.5	0.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1714	763	153	2482	56	50
V/C Ratio(X)	0.19	0.07	0.79	0.64	0.36	0.60
Avail Cap(c_a), veh/h	8176	3639	173	8984	1346	1198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.2	5.8	18.9	3.5	20.0	20.2
Incr Delay (d2), s/veh	0.1	0.0	18.9	0.3	3.8	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	1.7	0.1	0.2	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.3	5.9	37.8	3.8	23.8	31.2
LnGrp LOS	A	A	D	A	C	C
Approach Vol, veh/h	370			1710	50	
Approach Delay, s/veh	6.2			6.1	28.2	
Approach LOS	A			A	C	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	6.8	9.1	26.3	35.4
Change Period (Y+Rc), s	5.5	5.5	5.9	5.9
Max Green Setting (Gmax), s	31.9	4.1	97.1	106.7
Max Q Clear Time (g_c+I1), s	2.8	4.8	4.2	12.3
Green Ext Time (p_c), s	0.1	0.0	2.0	17.2

Intersection Summary	
HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	240	80	560	300	80	700
v/c Ratio	0.21	0.05	0.52	0.19	0.16	0.66
Control Delay	10.6	0.1	12.8	0.3	8.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	0.1	12.8	0.3	8.0	5.6
Queue Length 50th (ft)	7	0	21	0	7	0
Queue Length 95th (ft)	67	0	152	0	29	47
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3509	1550	3505	1550	1734	2593
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.05	0.16	0.19	0.05	0.27

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	240	80	0	560	300	0	0	0	80	0	700
Future Volume (vph)	0	240	80	0	560	300	0	0	0	80	0	700
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.4	4.0		6.8	4.0				4.4		4.4
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	240	80	0	560	300	0	0	0	80	0	700
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	587
Lane Group Flow (vph)	0	240	80	0	560	300	0	0	0	80	0	113
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		10.1	32.9		9.7	32.9				12.0		5.3
Effective Green, g (s)		10.1	32.9		9.7	32.9				12.0		5.3
Actuated g/C Ratio		0.31	1.00		0.29	1.00				0.36		0.16
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1086	1550		1043	1550				645		448
v/s Ratio Prot		0.07			c0.16					0.05		0.04
v/s Ratio Perm			0.05			c0.19						
v/c Ratio		0.22	0.05		0.54	0.19				0.12		0.25
Uniform Delay, d1		8.5	0.0		9.7	0.0				7.0		12.1
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.1		0.3	0.3				0.0		0.1
Delay (s)		8.5	0.1		10.0	0.3				7.0		12.2
Level of Service		A	A		A	A				A		B
Approach Delay (s)		6.4			6.6			0.0			11.6	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	32.9	Sum of lost time (s)	15.6
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	140	90	550	210	224	226	120
v/c Ratio	0.13	0.06	0.56	0.36	0.56	0.57	0.09
Control Delay	16.4	0.1	19.9	5.7	26.0	26.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	0.1	19.9	5.7	26.0	26.0	1.8
Queue Length 50th (ft)	13	0	63	0	53	53	0
Queue Length 95th (ft)	51	0	184	50	185	186	10
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3382	1550	3375	1473	1253	1258	2635
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.06	0.16	0.14	0.18	0.18	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	140	90	0	550	210	440	10	120	0	0	0
Future Volume (vph)	0	140	90	0	550	210	440	10	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.0		5.8	5.8	5.5	5.5	5.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		3539	1550		3539	1546	1681	1689	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		3539	1550		3539	1546	1681	1689	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	140	90	0	550	210	440	10	120	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	151	0	0	62	0	0	0
Lane Group Flow (vph)	0	140	90	0	550	59	224	226	58	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		14.6	48.7		13.7	13.7	11.6	11.6	23.7			
Effective Green, g (s)		14.6	48.7		13.7	13.7	11.6	11.6	23.7			
Actuated g/C Ratio		0.30	1.00		0.28	0.28	0.24	0.24	0.49			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		1060	1550		995	434	400	402	1356			
v/s Ratio Prot		0.04			c0.16		0.13	c0.13	0.02			
v/s Ratio Perm			c0.06			0.04						
v/c Ratio		0.13	0.06		0.55	0.14	0.56	0.56	0.04			
Uniform Delay, d1		12.4	0.0		14.9	13.1	16.3	16.3	6.6			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.1		0.4	0.1	1.1	1.1	0.0			
Delay (s)		12.5	0.1		15.3	13.1	17.4	17.4	6.6			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		7.6			14.7			15.1			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	48.7	Sum of lost time (s)	16.8
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	140	320	115	385	1150	280	10	1030	150	60	760	190
v/c Ratio	0.41	0.24	0.22	0.71	0.70	0.46	0.09	0.68	0.26	0.23	0.39	0.27
Control Delay	52.1	30.1	2.7	53.4	33.7	15.9	60.2	35.3	5.7	53.8	24.1	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	30.1	2.7	53.4	33.7	15.9	60.2	35.3	5.7	53.8	24.1	4.7
Queue Length 50th (ft)	46	60	0	129	244	60	3	223	0	20	125	0
Queue Length 95th (ft)	93	98	17	#276	363	161	14	323	44	48	212	50
Internal Link Dist (ft)		1627			1756			1585			1050	
Turn Bay Length (ft)	450		450	400		400	400		400	400		400
Base Capacity (vph)	629	2372	812	540	2250	778	108	2303	792	341	2649	904
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.13	0.14	0.71	0.51	0.36	0.09	0.45	0.19	0.18	0.29	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	320	115	385	1150	280	10	1030	150	60	760	190
Future Volume (veh/h)	140	320	115	385	1150	280	10	1030	150	60	760	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	320	115	385	1150	280	10	1030	150	60	760	190
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	1316	407	477	1693	524	26	1531	474	108	1653	512
Arrive On Green	0.06	0.26	0.26	0.14	0.33	0.33	0.01	0.30	0.30	0.03	0.32	0.32
Sat Flow, veh/h	3456	5106	1581	3456	5106	1582	3456	5106	1582	3456	5106	1582
Grp Volume(v), veh/h	140	320	115	385	1150	280	10	1030	150	60	760	190
Grp Sat Flow(s),veh/h/ln	1728	1702	1581	1728	1702	1582	1728	1702	1582	1728	1702	1582
Q Serve(g_s), s	3.3	4.1	4.9	9.0	16.2	12.0	0.2	14.8	6.1	1.4	9.9	7.7
Cycle Q Clear(g_c), s	3.3	4.1	4.9	9.0	16.2	12.0	0.2	14.8	6.1	1.4	9.9	7.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	222	1316	407	477	1693	524	26	1531	474	108	1653	512
V/C Ratio(X)	0.63	0.24	0.28	0.81	0.68	0.53	0.39	0.67	0.32	0.55	0.46	0.37
Avail Cap(c_a), veh/h	724	2721	843	621	2568	796	124	2641	818	393	3039	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	24.6	24.8	34.9	24.1	22.7	41.3	25.6	22.6	39.9	22.4	21.7
Incr Delay (d2), s/veh	2.9	0.1	0.4	6.0	0.5	0.8	9.3	0.5	0.4	4.4	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.5	1.7	3.9	5.8	4.0	0.1	5.3	2.1	0.6	3.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.0	24.6	25.2	40.9	24.6	23.5	50.6	26.2	23.0	44.3	22.6	22.1
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		575			1815			1190			1010	
Approach Delay, s/veh		28.7			27.9			26.0			23.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	30.9	17.0	27.4	6.1	32.9	10.9	33.6				
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9				
Max Green Setting (Gmax), s	9.5	43.2	15.0	44.5	3.0	49.7	17.5	42.0				
Max Q Clear Time (g_c+I1), s	3.4	16.8	11.0	6.9	2.2	11.9	5.3	18.2				
Green Ext Time (p_c), s	0.0	7.5	0.5	2.3	0.0	5.8	0.3	8.8				
Intersection Summary												
HCM 6th Ctrl Delay			26.6									
HCM 6th LOS			C									

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	40	50	20	100	110
Future Vol, veh/h	20	40	50	20	100	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	40	50	20	100	110

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	370	60	0	0	70	0
Stage 1	60	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	630	1005	-	-	1531	-
Stage 1	963	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	586	1005	-	-	1531	-
Mov Cap-2 Maneuver	586	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	692	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	3.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	812	1531	-
HCM Lane V/C Ratio	-	-	0.074	0.065	-
HCM Control Delay (s)	-	-	9.8	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection						
Int Delay, s/veh	2.9					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	10	60	40	0	120
Future Vol, veh/h	80	10	60	40	0	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	10	60	40	0	120

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	200	80	0	0	100	0
Stage 1	80	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	789	980	-	-	1493	-
Stage 1	943	-	-	-	-	-
Stage 2	905	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	789	980	-	-	1493	-
Mov Cap-2 Maneuver	789	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	905	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	806	1493	-
HCM Lane V/C Ratio	-	-	0.112	-	-
HCM Control Delay (s)	-	-	10	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	290	140	30	170	180
Future Vol, veh/h	40	290	140	30	170	180
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	290	140	30	170	180
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	11.6	10	15.2
HCM LOS	B	A	C

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	49%
Vol Thru, %	100%	0%	0%	0%	51%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	30	40	290	350
LT Vol	0	0	40	0	170
Through Vol	140	0	0	0	180
RT Vol	0	30	0	290	0
Lane Flow Rate	140	30	40	290	350
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.23	0.043	0.072	0.427	0.545
Departure Headway (Hd)	5.921	5.212	6.517	5.305	5.604
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	608	687	553	684	644
Service Time	3.652	2.942	4.217	3.005	3.628
HCM Lane V/C Ratio	0.23	0.044	0.072	0.424	0.543
HCM Control Delay	10.4	8.2	9.7	11.9	15.2
HCM Lane LOS	B	A	A	B	C
HCM 95th-tile Q	0.9	0.1	0.2	2.1	3.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	30	180	20	150	50	190	270	90	890
v/c Ratio	0.19	0.07	0.35	0.18	0.39	0.11	0.59	0.14	0.37	0.64
Control Delay	36.6	18.2	5.4	39.5	25.2	0.5	38.4	17.5	33.9	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	18.2	5.4	39.5	25.2	0.5	38.4	17.5	33.9	23.1
Queue Length 50th (ft)	9	8	0	6	44	0	58	20	27	84
Queue Length 95th (ft)	45	29	41	35	106	0	#233	65	96	214
Internal Link Dist (ft)		3313			367			2142		3285
Turn Bay Length (ft)	175		175	175		175	400		400	
Base Capacity (vph)	161	1045	955	112	994	911	326	2013	310	1840
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.03	0.19	0.18	0.15	0.05	0.58	0.13	0.29	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	30	180	20	150	50	190	250	20	90	780	110
Future Volume (veh/h)	30	30	180	20	150	50	190	250	20	90	780	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	30	180	20	150	50	190	250	20	90	780	110
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	341	288	26	266	225	240	1616	127	116	1201	168
Arrive On Green	0.05	0.18	0.18	0.01	0.14	0.14	0.13	0.33	0.33	0.07	0.27	0.27
Sat Flow, veh/h	1781	1870	1580	1781	1870	1578	1781	4825	379	1781	4524	633
Grp Volume(v), veh/h	30	30	180	20	150	50	190	175	95	90	585	305
Grp Sat Flow(s),veh/h/ln	1781	1870	1580	1781	1870	1578	1781	1702	1801	1781	1702	1754
Q Serve(g_s), s	0.9	0.7	5.7	0.6	4.0	1.5	5.6	1.9	2.0	2.7	8.2	8.3
Cycle Q Clear(g_c), s	0.9	0.7	5.7	0.6	4.0	1.5	5.6	1.9	2.0	2.7	8.2	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.36
Lane Grp Cap(c), veh/h	97	341	288	26	266	225	240	1140	603	116	904	466
V/C Ratio(X)	0.31	0.09	0.62	0.78	0.56	0.22	0.79	0.15	0.16	0.77	0.65	0.65
Avail Cap(c_a), veh/h	175	1132	956	122	1077	909	354	1378	729	337	1346	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	18.3	20.3	26.5	21.5	20.5	22.6	12.6	12.6	24.8	17.5	17.6
Incr Delay (d2), s/veh	1.8	0.1	2.2	38.6	1.9	0.5	7.3	0.1	0.1	10.4	0.8	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	2.0	0.5	1.7	0.5	2.4	0.6	0.6	1.3	2.6	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	18.4	22.5	65.0	23.4	21.0	29.8	12.6	12.7	35.2	18.3	19.1
LnGrp LOS	C	B	C	E	C	C	C	B	B	D	B	B
Approach Vol, veh/h		240			220			460			980	
Approach Delay, s/veh		22.5			26.6			19.7			20.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	23.9	6.3	14.6	12.8	20.2	8.4	12.5
Change Period (Y+Rc), s	5.5	5.9	5.5	4.8	5.5	5.9	5.5	4.8
Max Green Setting (Gmax), s	10.2	21.8	3.7	32.6	10.7	21.3	5.3	31.0
Max Q Clear Time (g_c+I1), s	4.7	4.0	2.6	7.7	7.6	10.3	2.9	6.0
Green Ext Time (p_c), s	0.1	1.2	0.0	0.7	0.1	3.8	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	30	10	10	580	1060
v/c Ratio	0.08	0.03	0.04	0.14	0.26
Control Delay	17.0	10.3	27.4	4.5	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	10.3	27.4	4.5	7.2
Queue Length 50th (ft)	4	0	1	0	0
Queue Length 95th (ft)	28	10	21	82	206
Internal Link Dist (ft)	2842			686	2142
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	1454	1285	300	4492	4055
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.03	0.13	0.26

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	10	10	580	990	70
Future Volume (veh/h)	30	10	10	580	990	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	10	10	580	990	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	50	45	14	3097	2056	145
Arrive On Green	0.03	0.03	0.01	0.61	0.42	0.42
Sat Flow, veh/h	1781	1585	1781	5274	5036	344
Grp Volume(v), veh/h	30	10	10	580	692	368
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1808
Q Serve(g_s), s	0.5	0.2	0.2	1.6	4.6	4.6
Cycle Q Clear(g_c), s	0.5	0.2	0.2	1.6	4.6	4.6
Prop In Lane	1.00	1.00	1.00			0.19
Lane Grp Cap(c), veh/h	50	45	14	3097	1437	763
V/C Ratio(X)	0.60	0.22	0.70	0.19	0.48	0.48
Avail Cap(c_a), veh/h	1969	1752	371	7216	3502	1859
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	14.8	15.4	2.7	6.5	6.5
Incr Delay (d2), s/veh	10.9	2.5	47.8	0.0	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.2	0.0	0.5	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.9	17.3	63.2	2.8	6.8	7.0
LnGrp LOS	C	B	E	A	A	A
Approach Vol, veh/h	40			590	1060	
Approach Delay, s/veh	23.7			3.8	6.9	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		24.8		6.4	5.7	19.1
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		44.1		34.5	6.5	32.1
Max Q Clear Time (g_c+I1), s		3.6		2.5	2.2	6.6
Green Ext Time (p_c), s		3.7		0.1	0.0	6.5

Intersection Summary			
HCM 6th Ctrl Delay			6.2
HCM 6th LOS			A

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	70	250	600	840	960
v/c Ratio	0.22	0.52	1.24	0.26	0.69
Control Delay	23.2	7.2	149.4	6.8	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	7.2	149.4	6.8	23.2
Queue Length 50th (ft)	23	0	~265	33	98
Queue Length 95th (ft)	52	45	#720	132	225
Internal Link Dist (ft)	1671			1050	4086
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	999	991	485	3578	1713
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.25	1.24	0.23	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	250	600	840	750	210
Future Volume (veh/h)	70	250	600	840	750	210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	250	600	840	750	210
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	352	313	483	3170	1041	288
Arrive On Green	0.20	0.20	0.27	0.62	0.26	0.26
Sat Flow, veh/h	1781	1585	1781	5274	4140	1100
Grp Volume(v), veh/h	70	250	600	840	642	318
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1667
Q Serve(g_s), s	2.1	9.4	17.0	4.7	10.8	10.9
Cycle Q Clear(g_c), s	2.1	9.4	17.0	4.7	10.8	10.9
Prop In Lane	1.00	1.00	1.00			0.66
Lane Grp Cap(c), veh/h	352	313	483	3170	892	437
V/C Ratio(X)	0.20	0.80	1.24	0.26	0.72	0.73
Avail Cap(c_a), veh/h	994	884	483	3549	1145	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	24.0	22.9	5.4	21.0	21.1
Incr Delay (d2), s/veh	0.3	4.7	125.9	0.0	1.6	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	22.6	0.9	3.7	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.3	28.7	148.8	5.4	22.6	24.6
LnGrp LOS	C	C	F	A	C	C
Approach Vol, veh/h	320			1440	960	
Approach Delay, s/veh	27.1			65.2	23.3	
Approach LOS	C			E	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		44.8		17.9	22.5	22.3
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		43.6		35.0	17.0	21.1
Max Q Clear Time (g_c+I1), s		6.7		11.4	19.0	12.9
Green Ext Time (p_c), s		5.7		1.0	0.0	3.4

Intersection Summary			
HCM 6th Ctrl Delay			45.9
HCM 6th LOS			D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	10	100	460	450	290	370	60	1150	90	90	1150
v/c Ratio	0.12	0.13	0.92	0.91	0.41	0.47	0.54	0.90	0.17	0.76	0.84
Control Delay	61.6	35.3	47.2	74.5	26.6	6.2	78.3	53.4	0.7	95.6	47.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	35.3	47.2	74.5	26.6	6.2	78.3	53.4	0.7	95.6	47.5
Queue Length 50th (ft)	8	32	202	187	150	19	24	326	0	37	325
Queue Length 95th (ft)	27	55	#385	#310	264	101	#56	#443	0	#90	#440
Internal Link Dist (ft)		450			475			2094			1585
Turn Bay Length (ft)	375		375	425		425	400		400	400	
Base Capacity (vph)	93	1015	595	494	754	812	111	1328	554	119	1373
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.10	0.77	0.91	0.38	0.46	0.54	0.87	0.16	0.76	0.84

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	100	460	450	290	370	60	1150	90	90	1140	10
Future Volume (vph)	10	100	460	450	290	370	60	1150	90	90	1140	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	0.97	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	3185	1405	3090	1676	1405	3090	4577	1404	3090	4570	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	3185	1405	3090	1676	1405	3090	4577	1404	3090	4570	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	100	460	450	290	370	60	1150	90	90	1140	10
RTOR Reduction (vph)	0	0	159	0	0	194	0	0	65	0	1	0
Lane Group Flow (vph)	10	100	301	450	290	176	60	1150	25	90	1149	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	1.3	33.4	33.4	19.3	51.4	51.4	3.3	34.8	34.8	4.6	36.1	
Effective Green, g (s)	1.3	33.4	33.4	19.3	51.4	51.4	3.3	34.8	34.8	4.6	36.1	
Actuated g/C Ratio	0.01	0.27	0.27	0.15	0.41	0.41	0.03	0.28	0.28	0.04	0.29	
Clearance Time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	16	845	373	474	684	574	81	1266	388	112	1311	
v/s Ratio Prot	0.01	0.03		c0.15	0.17		0.02	0.25		c0.03	c0.25	
v/s Ratio Perm			c0.21			0.13			0.02			
v/c Ratio	0.62	0.12	0.81	0.95	0.42	0.31	0.74	0.91	0.06	0.80	0.88	
Uniform Delay, d1	62.0	35.0	43.2	52.8	26.6	25.2	60.8	44.0	33.5	60.2	42.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	57.6	0.1	12.0	28.6	0.4	0.3	30.1	9.6	0.1	32.6	6.9	
Delay (s)	119.6	35.1	55.2	81.3	27.0	25.5	90.9	53.6	33.6	92.8	49.6	
Level of Service	F	D	E	F	C	C	F	D	C	F	D	
Approach Delay (s)		52.8			48.5			53.9			52.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	125.8	Sum of lost time (s)	28.1
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	10	1310	780	240	1350	770
v/c Ratio	0.01	0.96	0.55	0.15	0.66	0.71
Control Delay	13.8	37.9	21.3	0.2	22.7	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	37.9	21.3	0.2	22.7	5.6
Queue Length 50th (ft)	3	368	167	0	214	0
Queue Length 95th (ft)	12	#550	222	0	262	69
Internal Link Dist (ft)			551		2094	
Turn Bay Length (ft)						400
Base Capacity (vph)	829	1377	1561	1583	2242	1112
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.95	0.50	0.15	0.60	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	10	0	1310	0	780	240	0	1350	770
Future Volume (veh/h)	0	0	0	10	0	1310	0	780	240	0	1350	770
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				10	0	1310	0	780	0	0	1350	770
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				802	0	1255	0	1504		0	2162	669
Arrive On Green				0.45	0.00	0.45	0.00	0.42	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1781	0	2790	0	3647	1585	0	5274	1581
Grp Volume(v), veh/h				10	0	1310	0	780	0	0	1350	770
Grp Sat Flow(s),veh/h/ln				1781	0	1395	0	1777	1585	0	1702	1581
Q Serve(g_s), s				0.3	0.0	40.5	0.0	14.6	0.0	0.0	18.7	38.1
Cycle Q Clear(g_c), s				0.3	0.0	40.5	0.0	14.6	0.0	0.0	18.7	38.1
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				802	0	1255	0	1504		0	2162	669
V/C Ratio(X)				0.01	0.00	1.04	0.00	0.52		0.00	0.62	1.15
Avail Cap(c_a), veh/h				802	0	1255	0	1504		0	2162	669
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.7	0.0	24.8	0.0	19.2	0.0	0.0	20.3	26.0
Incr Delay (d2), s/veh				0.0	0.0	37.5	0.0	0.3	0.0	0.0	0.6	84.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	0.0	18.7	0.0	5.3	0.0	0.0	6.5	27.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.7	0.0	62.3	0.0	19.5	0.0	0.0	20.9	110.1
LnGrp LOS				B	A	F	A	B		A	C	F
Approach Vol, veh/h					1320			780	A		2120	
Approach Delay, s/veh					61.9			19.5			53.3	
Approach LOS					E			B			D	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		44.0				44.0		46.0				
Change Period (Y+Rc), s		5.9				5.9		5.5				
Max Green Setting (Gmax), s		38.1				38.1		40.5				
Max Q Clear Time (g_c+I1), s		16.6				40.1		42.5				
Green Ext Time (p_c), s		4.6				0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	49.7
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	490	70	540	90	60	1300
v/c Ratio	0.66	0.10	0.50	0.17	0.06	0.84
Control Delay	15.3	3.1	15.0	4.8	12.3	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	3.1	15.0	4.8	12.3	6.6
Queue Length 50th (ft)	87	0	53	0	5	0
Queue Length 95th (ft)	200	16	120	26	18	#25
Internal Link Dist (ft)			529		551	
Turn Bay Length (ft)						
Base Capacity (vph)	1695	1498	2672	1217	2672	1550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.05	0.20	0.07	0.02	0.84

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	490	0	70	0	0	0	0	540	90	0	60	1300
Future Volume (veh/h)	490	0	70	0	0	0	0	540	90	0	60	1300
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	490	0	70				0	540	90	0	60	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	639	0	569				0	1039	463	0	1039	
Arrive On Green	0.36	0.00	0.36				0.00	0.29	0.29	0.00	0.29	0.00
Sat Flow, veh/h	1781	0	1585				0	3647	1585	0	3647	1585
Grp Volume(v), veh/h	490	0	70				0	540	90	0	60	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	0	1777	1585
Q Serve(g_s), s	8.0	0.0	1.0				0.0	4.1	1.4	0.0	0.4	0.0
Cycle Q Clear(g_c), s	8.0	0.0	1.0				0.0	4.1	1.4	0.0	0.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	639	0	569				0	1039	463	0	1039	
V/C Ratio(X)	0.77	0.00	0.12				0.00	0.52	0.19	0.00	0.06	
Avail Cap(c_a), veh/h	2588	0	2302				0	3380	1507	0	3380	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	9.3	0.0	7.0				0.0	9.7	8.7	0.0	8.3	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.1				0.0	0.4	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.2				0.0	0.8	0.3	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.2	0.0	7.1				0.0	10.1	8.9	0.0	8.3	0.0
LnGrp LOS	B	A	A				A	B	A	A	A	
Approach Vol, veh/h		560						630			60	A
Approach Delay, s/veh		10.7						9.9			8.3	
Approach LOS		B						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		15.5		17.2		15.5						
Change Period (Y+Rc), s		5.9		5.5		5.9						
Max Green Setting (Gmax), s		31.1		47.5		31.1						
Max Q Clear Time (g_c+I1), s		6.1		10.0		2.4						
Green Ext Time (p_c), s		3.4		1.9		0.2						

Intersection Summary			
HCM 6th Ctrl Delay			10.2
HCM 6th LOS			B

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	30	20	10	10
Future Vol, veh/h	20	20	30	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	20	30	20	10	10

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	70	40	0	0	50	0
Stage 1	40	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	934	1031	-	-	1557	-
Stage 1	982	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	928	1031	-	-	1557	-
Mov Cap-2 Maneuver	928	-	-	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	987	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	977	1557	-
HCM Lane V/C Ratio	-	-	0.041	0.006	-
HCM Control Delay (s)	-	-	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	30	20	140	40	20	290
v/c Ratio	0.07	0.05	0.06	0.02	0.05	0.13
Control Delay	15.2	8.6	12.7	4.0	15.3	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	8.6	12.7	4.0	15.3	1.4
Queue Length 50th (ft)	3	0	0	0	2	0
Queue Length 95th (ft)	28	14	57	22	21	18
Internal Link Dist (ft)	4683			3724	1647	
Turn Bay Length (ft)		175	300			175
Base Capacity (vph)	1554	1306	2572	1741	1423	2318
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.05	0.02	0.01	0.13

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	30	20	140	40	20	290
Future Volume (veh/h)	30	20	140	40	20	290
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	20	140	40	20	290
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	115	97	428	734	317	842
Arrive On Green	0.06	0.06	0.12	0.39	0.18	0.18
Sat Flow, veh/h	1870	1571	3456	1870	1781	2790
Grp Volume(v), veh/h	30	20	140	40	20	290
Grp Sat Flow(s),veh/h/ln	1870	1571	1728	1870	1781	1395
Q Serve(g_s), s	0.4	0.3	1.0	0.4	0.2	2.1
Cycle Q Clear(g_c), s	0.4	0.3	1.0	0.4	0.2	2.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	115	97	428	734	317	842
V/C Ratio(X)	0.26	0.21	0.33	0.05	0.06	0.34
Avail Cap(c_a), veh/h	2121	1782	2149	3672	1779	3131
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.9	11.8	10.6	5.0	9.1	7.2
Incr Delay (d2), s/veh	1.2	1.0	0.4	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.2	0.0	0.1	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.1	12.9	11.1	5.0	9.2	7.5
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	50			180	310	
Approach Delay, s/veh	13.0			9.7	7.6	
Approach LOS	B			A	A	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.8	7.5				16.3		10.2
Change Period (Y+Rc), s	5.5	5.9				5.9		5.5
Max Green Setting (Gmax), s	16.5	30.1				52.1		26.5
Max Q Clear Time (g_c+I1), s	3.0	2.4				2.4		4.1
Green Ext Time (p_c), s	0.3	0.1				0.2		1.1

Intersection Summary			
HCM 6th Ctrl Delay			8.8
HCM 6th LOS			A

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	190	40	80	100	10	30	20	230	10	10	10
v/c Ratio	0.07	0.32	0.06	0.26	0.12	0.01	0.12	0.05	0.43	0.07	0.03	0.02
Control Delay	32.5	20.5	0.2	26.0	12.0	0.0	28.3	17.8	5.9	32.5	22.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	20.5	0.2	26.0	12.0	0.0	28.3	17.8	5.9	32.5	22.6	0.1
Queue Length 50th (ft)	2	36	0	15	9	0	6	4	0	2	2	0
Queue Length 95th (ft)	21	144	0	80	70	0	41	23	48	21	16	0
Internal Link Dist (ft)		3724			3503			1141			1439	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	146	1016	949	480	1318	1142	313	1257	1119	146	1104	1011
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.19	0.04	0.17	0.08	0.01	0.10	0.02	0.21	0.07	0.01	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	190	40	80	100	10	30	20	230	10	10	10
Future Volume (veh/h)	10	190	40	80	100	10	30	20	230	10	10	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	190	40	80	100	10	30	20	230	10	10	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	321	271	101	413	348	38	381	322	14	357	301
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.02	0.20	0.20	0.01	0.19	0.19
Sat Flow, veh/h	1781	1870	1576	1781	1870	1578	1781	1870	1577	1781	1870	1577
Grp Volume(v), veh/h	10	190	40	80	100	10	30	20	230	10	10	10
Grp Sat Flow(s),veh/h/ln	1781	1870	1576	1781	1870	1578	1781	1870	1577	1781	1870	1577
Q Serve(g_s), s	0.2	3.8	0.9	1.8	1.8	0.2	0.7	0.4	5.5	0.2	0.2	0.2
Cycle Q Clear(g_c), s	0.2	3.8	0.9	1.8	1.8	0.2	0.7	0.4	5.5	0.2	0.2	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	14	321	271	101	413	348	38	381	322	14	357	301
V/C Ratio(X)	0.71	0.59	0.15	0.79	0.24	0.03	0.79	0.05	0.71	0.71	0.03	0.03
Avail Cap(c_a), veh/h	153	1060	893	503	1427	1204	328	1336	1126	153	1152	971
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	15.6	14.3	19.0	13.1	12.5	19.9	13.1	15.1	20.2	13.4	13.4
Incr Delay (d2), s/veh	49.6	1.7	0.2	12.8	0.3	0.0	30.1	0.1	3.0	49.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.3	0.2	0.9	0.5	0.1	0.5	0.1	1.6	0.3	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.8	17.3	14.6	31.8	13.4	12.5	49.9	13.1	18.1	69.8	13.4	13.5
LnGrp LOS	E	B	B	C	B	B	D	B	B	E	B	B
Approach Vol, veh/h		240			190			280			30	
Approach Delay, s/veh		19.0			21.1			21.1			32.2	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	14.2	7.8	12.9	6.4	13.7	5.8	14.9				
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9				
Max Green Setting (Gmax), s	3.5	29.1	11.5	23.1	7.5	25.1	3.5	31.1				
Max Q Clear Time (g_c+I1), s	2.2	7.5	3.8	5.8	2.7	2.2	2.2	3.8				
Green Ext Time (p_c), s	0.0	0.8	0.1	0.9	0.0	0.0	0.0	0.4				
Intersection Summary												
HCM 6th Ctrl Delay			20.9									
HCM 6th LOS			C									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	500	10	280	240	10	930
v/c Ratio	0.78	0.02	0.54	0.12	0.03	0.81
Control Delay	29.6	10.1	33.3	7.2	20.3	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	10.1	33.3	7.2	20.3	13.0
Queue Length 50th (ft)	169	0	52	18	3	46
Queue Length 95th (ft)	351	11	#120	49	15	128
Internal Link Dist (ft)	3503			1595	3285	
Turn Bay Length (ft)		150	375			
Base Capacity (vph)	950	801	568	2652	926	1750
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.01	0.49	0.09	0.01	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	500	10	280	240	10	930
Future Volume (veh/h)	500	10	280	240	10	930
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	500	10	280	240	10	930
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	572	483	369	1719	656	1028
Arrive On Green	0.31	0.31	0.11	0.48	0.37	0.37
Sat Flow, veh/h	1870	1580	3456	3647	1781	2790
Grp Volume(v), veh/h	500	10	280	240	10	930
Grp Sat Flow(s),veh/h/ln	1870	1580	1728	1777	1781	1395
Q Serve(g_s), s	19.5	0.3	6.1	2.9	0.3	24.4
Cycle Q Clear(g_c), s	19.5	0.3	6.1	2.9	0.3	24.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	572	483	369	1719	656	1028
V/C Ratio(X)	0.87	0.02	0.76	0.14	0.02	0.90
Avail Cap(c_a), veh/h	754	637	452	2151	736	1153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	18.7	33.5	11.0	15.5	23.1
Incr Delay (d2), s/veh	8.9	0.0	5.8	0.0	0.0	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	0.1	2.6	0.9	0.1	8.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.3	18.7	39.3	11.1	15.5	32.6
LnGrp LOS	C	B	D	B	B	C
Approach Vol, veh/h	510			520	940	
Approach Delay, s/veh	34.0			26.3	32.4	
Approach LOS	C			C	C	

Timer - Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		33.9	13.7	29.5				43.2
Change Period (Y+Rc), s		5.5	5.5	5.9				5.9
Max Green Setting (Gmax), s		31.9	10.1	31.1				46.7
Max Q Clear Time (g_c+I1), s		26.4	8.1	21.5				4.9
Green Ext Time (p_c), s		2.1	0.2	1.9				1.4

Intersection Summary			
HCM 6th Ctrl Delay			31.2
HCM 6th LOS			C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2225	10	30	575	10	90
v/c Ratio	0.85	0.01	0.48	0.20	0.06	0.45
Control Delay	16.7	5.3	87.3	3.6	51.3	32.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	5.3	87.3	3.6	51.3	32.7
Queue Length 50th (ft)	515	1	23	35	7	28
Queue Length 95th (ft)	#1265	9	#86	114	25	81
Internal Link Dist (ft)	1595			4369	10448	
Turn Bay Length (ft)		150	180			175
Base Capacity (vph)	2865	1248	63	3079	490	470
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.01	0.48	0.19	0.02	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2225	10	30	575	10	90
Future Volume (veh/h)	2225	10	30	575	10	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2225	10	30	575	10	90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2634	1173	37	2899	130	116
Arrive On Green	0.74	0.74	0.02	0.82	0.07	0.07
Sat Flow, veh/h	3647	1583	1781	3647	1781	1585
Grp Volume(v), veh/h	2225	10	30	575	10	90
Grp Sat Flow(s),veh/h/ln	1777	1583	1781	1777	1781	1585
Q Serve(g_s), s	44.5	0.2	1.7	3.7	0.5	5.7
Cycle Q Clear(g_c), s	44.5	0.2	1.7	3.7	0.5	5.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2634	1173	37	2899	130	116
V/C Ratio(X)	0.84	0.01	0.81	0.20	0.08	0.78
Avail Cap(c_a), veh/h	3360	1497	71	3693	553	492
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	3.5	50.1	2.1	44.3	46.8
Incr Delay (d2), s/veh	1.7	0.0	32.1	0.0	0.2	10.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	1.1	0.4	0.2	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.9	3.5	82.2	2.1	44.6	57.2
LnGrp LOS	B	A	F	A	D	E
Approach Vol, veh/h	2235			605	100	
Approach Delay, s/veh	10.9			6.1	56.0	
Approach LOS	B			A	E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		13.0	7.6	82.0				89.7
Change Period (Y+Rc), s		5.5	5.5	5.9				5.9
Max Green Setting (Gmax), s		31.9	4.1	97.1				106.7
Max Q Clear Time (g_c+I1), s		7.7	3.7	46.5				5.7
Green Ext Time (p_c), s		0.3	0.0	29.6				3.6

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1110	300	170	80	80	200
v/c Ratio	0.72	0.19	0.11	0.05	0.19	0.34
Control Delay	13.2	0.3	8.5	0.1	12.9	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	0.3	8.5	0.1	12.9	6.8
Queue Length 50th (ft)	62	0	7	0	11	0
Queue Length 95th (ft)	311	0	45	0	48	33
Internal Link Dist (ft)	4369		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3394	1550	3390	1550	1680	2500
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.19	0.05	0.05	0.05	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1110	300	0	170	80	0	0	0	80	0	200
Future Volume (vph)	0	1110	300	0	170	80	0	0	0	80	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.4	4.0		6.8	4.0				4.4		4.4
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1110	300	0	170	80	0	0	0	80	0	200
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	171
Lane Group Flow (vph)	0	1110	300	0	170	80	0	0	0	80	0	29
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		16.9	40.3		16.5	40.3				12.6		5.9
Effective Green, g (s)		16.9	40.3		16.5	40.3				12.6		5.9
Actuated g/C Ratio		0.42	1.00		0.41	1.00				0.31		0.15
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1484	1550		1448	1550				553		408
v/s Ratio Prot		c0.31			0.05					0.05		0.01
v/s Ratio Perm			c0.19			0.05						
v/c Ratio		0.75	0.19		0.12	0.05				0.14		0.07
Uniform Delay, d1		9.9	0.0		7.4	0.0				10.0		14.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		1.8	0.3		0.0	0.1				0.0		0.0
Delay (s)		11.7	0.3		7.4	0.1				10.0		14.9
Level of Service		B	A		A	A				B		B
Approach Delay (s)		9.3			5.0			0.0			13.5	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	40.3	Sum of lost time (s)	15.6
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	480	700	270	210	79	81	580
v/c Ratio	0.55	0.45	0.34	0.41	0.33	0.33	0.36
Control Delay	17.5	1.0	16.2	6.0	24.4	24.4	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	1.0	16.2	6.0	24.4	24.4	2.5
Queue Length 50th (ft)	45	0	24	0	15	15	7
Queue Length 95th (ft)	133	0	78	45	76	77	39
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3452	1550	3444	1499	1432	1444	2729
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.45	0.08	0.14	0.06	0.06	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	480	700	0	270	210	150	10	580	0	0	0
Future Volume (vph)	0	480	700	0	270	210	150	10	580	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.0		5.8	5.8	5.5	5.5	5.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1550		3539	1547	1681	1695	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1550		3539	1547	1681	1695	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	480	700	0	270	210	150	10	580	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	161	0	0	226	0	0	0
Lane Group Flow (vph)	0	480	700	0	270	50	79	81	354	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		10.8	42.0		9.9	9.9	6.2	6.2	20.8			
Effective Green, g (s)		10.8	42.0		9.9	9.9	6.2	6.2	20.8			
Actuated g/C Ratio		0.26	1.00		0.24	0.24	0.15	0.15	0.50			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		910	1550		834	364	248	250	1380			
v/s Ratio Prot		0.14			0.08		0.05	0.05	0.13			
v/s Ratio Perm			c0.45			0.03						
v/c Ratio		0.53	0.45		0.32	0.14	0.32	0.32	0.26			
Uniform Delay, d1		13.4	0.0		13.3	12.7	16.0	16.0	6.1			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.3	1.0		0.1	0.1	0.3	0.3	0.1			
Delay (s)		13.7	1.0		13.4	12.7	16.3	16.3	6.2			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		6.1			13.1			8.4			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	280	980	27	227	820	120	10	820	200	270	1167	180
v/c Ratio	0.59	0.68	0.05	0.54	0.60	0.23	0.09	0.63	0.37	0.78	0.57	0.25
Control Delay	48.2	34.3	0.1	48.9	33.9	3.0	57.8	35.4	6.5	63.0	25.8	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	34.3	0.1	48.9	33.9	3.0	57.8	35.4	6.5	63.0	25.8	4.7
Queue Length 50th (ft)	81	191	0	66	158	0	3	161	0	82	191	0
Queue Length 95th (ft)	169	305	0	142	257	21	14	257	56	#229	356	49
Internal Link Dist (ft)		1627			1756			1585			1050	
Turn Bay Length (ft)	450		450	400		400	400		400	400		400
Base Capacity (vph)	634	2388	816	543	2254	779	108	2318	820	344	2667	904
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.41	0.03	0.42	0.36	0.15	0.09	0.35	0.24	0.78	0.44	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	980	27	227	820	120	10	820	200	270	1167	180
Future Volume (veh/h)	280	980	27	227	820	120	10	820	200	270	1167	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	280	980	27	227	820	120	10	820	200	270	1167	180
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	1449	449	318	1361	422	26	1285	398	349	1763	546
Arrive On Green	0.11	0.28	0.28	0.09	0.27	0.27	0.01	0.25	0.25	0.10	0.35	0.35
Sat Flow, veh/h	3456	5106	1582	3456	5106	1581	3456	5106	1581	3456	5106	1582
Grp Volume(v), veh/h	280	980	27	227	820	120	10	820	200	270	1167	180
Grp Sat Flow(s),veh/h/ln	1728	1702	1582	1728	1702	1581	1728	1702	1581	1728	1702	1582
Q Serve(g_s), s	6.6	14.3	1.0	5.4	11.8	5.1	0.2	12.0	9.1	6.4	16.3	7.1
Cycle Q Clear(g_c), s	6.6	14.3	1.0	5.4	11.8	5.1	0.2	12.0	9.1	6.4	16.3	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	378	1449	449	318	1361	422	26	1285	398	349	1763	546
V/C Ratio(X)	0.74	0.68	0.06	0.71	0.60	0.28	0.39	0.64	0.50	0.77	0.66	0.33
Avail Cap(c_a), veh/h	720	2706	838	617	2554	791	123	2627	814	391	3022	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	26.7	21.9	37.0	26.9	24.4	41.5	28.0	26.9	36.8	23.3	20.3
Incr Delay (d2), s/veh	2.9	0.6	0.1	3.0	0.4	0.4	9.3	0.5	1.0	8.4	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	5.2	0.4	2.2	4.3	1.7	0.1	4.4	3.2	2.9	5.7	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	27.2	22.0	40.0	27.3	24.8	50.8	28.5	27.9	45.2	23.8	20.7
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1287			1167			1030			1617	
Approach Delay, s/veh		29.7			29.5			28.6			27.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	27.0	13.2	29.7	6.1	34.9	14.7	28.3
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	9.5	43.2	15.0	44.5	3.0	49.7	17.5	42.0
Max Q Clear Time (g_c+I1), s	8.4	14.0	7.4	16.3	2.2	18.3	8.6	13.8
Green Ext Time (p_c), s	0.1	6.1	0.4	6.7	0.0	9.2	0.6	5.7

Intersection Summary			
HCM 6th Ctrl Delay			28.6
HCM 6th LOS			C

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	90	50	30	60	40
Future Vol, veh/h	30	90	50	30	60	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	90	50	30	60	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	225	65	0	0	80	0
Stage 1	65	-	-	-	-	-
Stage 2	160	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	763	999	-	-	1518	-
Stage 1	958	-	-	-	-	-
Stage 2	869	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	732	999	-	-	1518	-
Mov Cap-2 Maneuver	732	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	834	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	4.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	916	1518	-
HCM Lane V/C Ratio	-	-	0.131	0.04	-
HCM Control Delay (s)	-	-	9.5	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection						
Int Delay, s/veh	2.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	10	70	90	0	60
Future Vol, veh/h	50	10	70	90	0	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	10	70	90	0	60

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	175	115	0	0	160	0
Stage 1	115	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	815	937	-	-	1419	-
Stage 1	910	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	815	937	-	-	1419	-
Mov Cap-2 Maneuver	815	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	833	1419	-
HCM Lane V/C Ratio	-	-	0.072	-	-
HCM Control Delay (s)	-	-	9.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	220	190	50	340	130
Future Vol, veh/h	20	220	190	50	340	130
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	220	190	50	340	130
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	11.4	10.6	21.8
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	72%
Vol Thru, %	100%	0%	0%	0%	28%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	50	20	220	470
LT Vol	0	0	20	0	340
Through Vol	190	0	0	0	130
RT Vol	0	50	0	220	0
Lane Flow Rate	190	50	20	220	470
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.308	0.071	0.039	0.35	0.725
Departure Headway (Hd)	5.839	5.129	6.943	5.726	5.552
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	616	699	516	627	653
Service Time	3.57	2.86	4.681	3.463	3.575
HCM Lane V/C Ratio	0.308	0.072	0.039	0.351	0.72
HCM Control Delay	11.2	8.3	10	11.5	21.8
HCM Lane LOS	B	A	A	B	C
HCM 95th-tile Q	1.3	0.2	0.1	1.6	6.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	160	210	30	60	90	200	840	90	390
v/c Ratio	0.55	0.32	0.37	0.27	0.18	0.22	0.62	0.51	0.37	0.34
Control Delay	48.2	21.7	5.5	41.5	23.8	1.2	39.8	22.0	34.3	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	21.7	5.5	41.5	23.8	1.2	39.8	22.0	34.3	20.9
Queue Length 50th (ft)	32	44	0	11	20	0	68	94	30	38
Queue Length 95th (ft)	#141	109	44	#50	50	1	#247	203	96	90
Internal Link Dist (ft)		3313			367			2142		3285
Turn Bay Length (ft)	175		175	175		175	400		400	
Base Capacity (vph)	165	1038	963	111	987	907	323	1925	308	1829
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.15	0.22	0.27	0.06	0.10	0.62	0.44	0.29	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	160	210	30	60	90	200	820	20	90	340	50
Future Volume (veh/h)	90	160	210	30	60	90	200	820	20	90	340	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	160	210	30	60	90	200	820	20	90	340	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	386	326	37	257	217	254	1354	33	116	841	121
Arrive On Green	0.09	0.21	0.21	0.02	0.14	0.14	0.14	0.26	0.26	0.07	0.19	0.19
Sat Flow, veh/h	1781	1870	1580	1781	1870	1578	1781	5127	125	1781	4508	646
Grp Volume(v), veh/h	90	160	210	30	60	90	200	544	296	90	254	136
Grp Sat Flow(s),veh/h/ln	1781	1870	1580	1781	1870	1578	1781	1702	1847	1781	1702	1750
Q Serve(g_s), s	2.4	3.6	5.9	0.8	1.4	2.6	5.3	6.8	6.9	2.4	3.2	3.3
Cycle Q Clear(g_c), s	2.4	3.6	5.9	0.8	1.4	2.6	5.3	6.8	6.9	2.4	3.2	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.37
Lane Grp Cap(c), veh/h	160	386	326	37	257	217	254	899	488	116	635	327
V/C Ratio(X)	0.56	0.41	0.64	0.82	0.23	0.42	0.79	0.61	0.61	0.78	0.40	0.41
Avail Cap(c_a), veh/h	193	1247	1054	135	1186	1001	390	1518	824	372	1483	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	16.8	17.8	23.9	18.8	19.3	20.2	15.8	15.8	22.5	17.5	17.5
Incr Delay (d2), s/veh	3.1	0.7	2.1	34.1	0.5	1.3	5.9	0.7	1.2	10.6	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.4	2.0	0.7	0.6	0.9	2.1	2.0	2.3	1.2	1.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	17.5	19.9	58.0	19.3	20.6	26.1	16.4	17.0	33.1	17.9	18.4
LnGrp LOS	C	B	B	E	B	C	C	B	B	C	B	B
Approach Vol, veh/h		460			180			1040			480	
Approach Delay, s/veh		20.0			26.4			18.4			20.9	
Approach LOS		B			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	18.8	6.5	14.9	12.5	15.0	9.9	11.5				
Change Period (Y+Rc), s	5.5	5.9	5.5	4.8	5.5	5.9	5.5	4.8				
Max Green Setting (Gmax), s	10.2	21.8	3.7	32.6	10.7	21.3	5.3	31.0				
Max Q Clear Time (g_c+I1), s	4.4	8.9	2.8	7.9	7.3	5.3	4.4	4.6				
Green Ext Time (p_c), s	0.1	3.8	0.0	1.6	0.2	1.8	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			20.0									
HCM 6th LOS			B									

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	80	20	10	1070	740
v/c Ratio	0.20	0.06	0.04	0.33	0.24
Control Delay	16.5	7.2	25.1	7.7	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	7.2	25.1	7.7	9.6
Queue Length 50th (ft)	20	0	3	45	28
Queue Length 95th (ft)	48	12	18	161	141
Internal Link Dist (ft)	2842			686	2142
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	1324	1174	261	4557	3573
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.02	0.04	0.23	0.21

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	20	10	1070	690	50
Future Volume (veh/h)	80	20	10	1070	690	50
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	20	10	1070	690	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	120	107	14	2724	1618	117
Arrive On Green	0.07	0.07	0.01	0.53	0.33	0.33
Sat Flow, veh/h	1781	1585	1781	5274	5028	350
Grp Volume(v), veh/h	80	20	10	1070	482	258
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1806
Q Serve(g_s), s	1.3	0.3	0.2	3.5	3.1	3.2
Cycle Q Clear(g_c), s	1.3	0.3	0.2	3.5	3.1	3.2
Prop In Lane	1.00	1.00	1.00			0.19
Lane Grp Cap(c), veh/h	120	107	14	2724	1133	601
V/C Ratio(X)	0.67	0.19	0.70	0.39	0.43	0.43
Avail Cap(c_a), veh/h	2152	1915	405	7885	3826	2030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	12.6	14.1	3.9	7.4	7.4
Incr Delay (d2), s/veh	6.2	0.8	47.2	0.1	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.2	0.0	0.4	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.2	13.4	61.4	4.0	7.7	7.9
LnGrp LOS	B	B	E	A	A	A
Approach Vol, veh/h	100			1080	740	
Approach Delay, s/veh	18.1			4.6	7.7	
Approach LOS	B			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		21.1		7.4	5.7	15.4
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		44.1		34.5	6.5	32.1
Max Q Clear Time (g_c+I1), s		5.5		3.3	2.2	5.2
Green Ext Time (p_c), s		7.8		0.3	0.0	4.3

Intersection Summary			
HCM 6th Ctrl Delay			6.5
HCM 6th LOS			A

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	190	640	350	860	1080
v/c Ratio	0.45	0.86	0.82	0.28	0.76
Control Delay	25.7	18.5	47.5	8.8	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	18.5	47.5	8.8	29.3
Queue Length 50th (ft)	73	57	145	56	149
Queue Length 95th (ft)	123	188	#387	135	#297
Internal Link Dist (ft)	1671			1050	4086
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	875	1019	425	3131	1501
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.63	0.82	0.27	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	190	640	350	860	960	120
Future Volume (veh/h)	190	640	350	860	960	120
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	640	350	860	960	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	695	619	338	2465	1065	133
Arrive On Green	0.39	0.39	0.19	0.48	0.23	0.23
Sat Flow, veh/h	1781	1585	1781	5274	4764	573
Grp Volume(v), veh/h	190	640	350	860	710	370
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1764
Q Serve(g_s), s	6.5	35.0	17.0	9.4	18.2	18.3
Cycle Q Clear(g_c), s	6.5	35.0	17.0	9.4	18.2	18.3
Prop In Lane	1.00	1.00	1.00			0.32
Lane Grp Cap(c), veh/h	695	619	338	2465	789	409
V/C Ratio(X)	0.27	1.03	1.04	0.35	0.90	0.90
Avail Cap(c_a), veh/h	695	619	338	2482	801	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	27.3	36.3	14.4	33.4	33.5
Incr Delay (d2), s/veh	0.2	45.4	58.8	0.1	13.1	22.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	32.6	12.3	3.1	8.2	9.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.9	72.8	95.1	14.5	46.6	56.0
LnGrp LOS	B	F	F	B	D	E
Approach Vol, veh/h	830			1210	1080	
Approach Delay, s/veh	60.4			37.8	49.8	
Approach LOS	E			D	D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.2		40.5	22.5	26.7
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		43.6		35.0	17.0	21.1
Max Q Clear Time (g_c+I1), s		11.4		37.0	19.0	20.3
Green Ext Time (p_c), s		5.7		0.0	0.0	0.5

Intersection Summary			
HCM 6th Ctrl Delay			48.0
HCM 6th LOS			D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	20	340	130	120	180	120	110	1090	200	370	1380
v/c Ratio	0.21	0.57	0.29	0.74	0.43	0.23	0.63	0.83	0.36	0.87	0.82
Control Delay	54.9	40.7	1.6	75.7	36.1	1.0	65.4	41.4	5.0	65.0	35.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	40.7	1.6	75.7	36.1	1.0	65.4	41.4	5.0	65.0	35.0
Queue Length 50th (ft)	12	105	0	38	91	0	35	227	0	117	272
Queue Length 95th (ft)	42	147	0	#107	172	0	#91	#409	43	#257	#493
Internal Link Dist (ft)		450			475			2094			1585
Turn Bay Length (ft)	375		375	425		425	400		400	400	
Base Capacity (vph)	96	1204	677	162	620	668	175	1325	566	427	1696
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.28	0.19	0.74	0.29	0.18	0.63	0.82	0.35	0.87	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	340	130	120	180	120	110	1090	200	370	1360	20
Future Volume (vph)	20	340	130	120	180	120	110	1090	200	370	1360	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	0.97	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	3185	1406	3090	1676	1405	3090	4577	1405	3090	4566	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	3185	1406	3090	1676	1405	3090	4577	1405	3090	4566	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	340	130	120	180	120	110	1090	200	370	1360	20
RTOR Reduction (vph)	0	0	102	0	0	91	0	0	144	0	1	0
Lane Group Flow (vph)	20	340	28	120	180	29	110	1090	56	370	1379	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	2.3	22.5	22.5	5.3	25.5	25.5	5.7	29.1	29.1	14.0	37.4	
Effective Green, g (s)	2.3	22.5	22.5	5.3	25.5	25.5	5.7	29.1	29.1	14.0	37.4	
Actuated g/C Ratio	0.02	0.22	0.22	0.05	0.24	0.24	0.05	0.28	0.28	0.13	0.36	
Clearance Time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	35	685	302	156	408	342	168	1273	390	413	1632	
v/s Ratio Prot	0.01	c0.11		c0.04	c0.11		0.04	0.24		c0.12	c0.30	
v/s Ratio Perm			0.02			0.02			0.04			
v/c Ratio	0.57	0.50	0.09	0.77	0.44	0.09	0.65	0.86	0.14	0.90	0.84	
Uniform Delay, d1	50.7	36.1	32.9	49.0	33.5	30.5	48.5	35.8	28.4	44.6	30.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	20.6	0.6	0.1	20.1	0.8	0.1	8.8	5.9	0.2	21.3	4.2	
Delay (s)	71.2	36.6	33.0	69.2	34.3	30.7	57.3	41.6	28.5	65.8	35.1	
Level of Service	E	D	C	E	C	C	E	D	C	E	D	
Approach Delay (s)		37.1			43.2			41.0			41.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	41.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	104.6	Sum of lost time (s)	28.1
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	10	1170	490	120	1650	660
v/c Ratio	0.01	0.88	0.30	0.08	0.71	0.62
Control Delay	14.1	22.1	15.2	0.1	20.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	22.1	15.2	0.1	20.2	4.4
Queue Length 50th (ft)	3	205	77	0	232	0
Queue Length 95th (ft)	12	305	133	0	343	63
Internal Link Dist (ft)			551		2094	
Turn Bay Length (ft)						400
Base Capacity (vph)	935	1653	1760	1583	2529	1100
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.71	0.28	0.08	0.65	0.60

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	10	0	1170	0	490	120	0	1650	660
Future Volume (veh/h)	0	0	0	10	0	1170	0	490	120	0	1650	660
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				10	0	1170	0	490	0	0	1650	660
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				788	0	1234	0	1525		0	2191	679
Arrive On Green				0.44	0.00	0.44	0.00	0.43	0.00	0.00	0.43	0.43
Sat Flow, veh/h				1781	0	2790	0	3647	1585	0	5274	1581
Grp Volume(v), veh/h				10	0	1170	0	490	0	0	1650	660
Grp Sat Flow(s),veh/h/ln				1781	0	1395	0	1777	1585	0	1702	1581
Q Serve(g_s), s				0.3	0.0	35.8	0.0	8.1	0.0	0.0	24.2	36.3
Cycle Q Clear(g_c), s				0.3	0.0	35.8	0.0	8.1	0.0	0.0	24.2	36.3
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				788	0	1234	0	1525		0	2191	679
V/C Ratio(X)				0.01	0.00	0.95	0.00	0.32		0.00	0.75	0.97
Avail Cap(c_a), veh/h				813	0	1273	0	1525		0	2191	679
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.9	0.0	23.8	0.0	16.8	0.0	0.0	21.4	24.8
Incr Delay (d2), s/veh				0.0	0.0	14.4	0.0	0.1	0.0	0.0	1.5	27.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	0.0	13.2	0.0	2.9	0.0	0.0	8.5	16.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.9	0.0	38.1	0.0	16.9	0.0	0.0	22.9	52.5
LnGrp LOS				B	A	D	A	B		A	C	D
Approach Vol, veh/h					1180			490	A		2310	
Approach Delay, s/veh					37.9			16.9			31.4	
Approach LOS					D			B			C	
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		44.0				44.0		44.8				
Change Period (Y+Rc), s		5.9				5.9		5.5				
Max Green Setting (Gmax), s		38.1				38.1		40.5				
Max Q Clear Time (g_c+I1), s		10.1				38.3		37.8				
Green Ext Time (p_c), s		2.9				0.0		1.5				
Intersection Summary												
HCM 6th Ctrl Delay			31.5									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	340	180	270	210	170	1480
v/c Ratio	0.51	0.26	0.28	0.36	0.18	0.95
Control Delay	11.6	2.8	11.4	4.4	11.0	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	2.8	11.4	4.4	11.0	18.1
Queue Length 50th (ft)	39	0	17	0	11	0
Queue Length 95th (ft)	122	26	55	36	37	#172
Internal Link Dist (ft)			529		551	
Turn Bay Length (ft)						
Base Capacity (vph)	1725	1526	3195	1449	3195	1550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.12	0.08	0.14	0.05	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	0	180	0	0	0	0	270	210	0	170	1480
Future Volume (veh/h)	340	0	180	0	0	0	0	270	210	0	170	1480
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	340	0	180				0	270	210	0	170	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	532	0	473				0	955	426	0	955	
Arrive On Green	0.30	0.00	0.30				0.00	0.27	0.27	0.00	0.27	0.00
Sat Flow, veh/h	1781	0	1585				0	3647	1585	0	3647	1585
Grp Volume(v), veh/h	340	0	180				0	270	210	0	170	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	0	1777	1585
Q Serve(g_s), s	4.4	0.0	2.4				0.0	1.6	2.9	0.0	1.0	0.0
Cycle Q Clear(g_c), s	4.4	0.0	2.4				0.0	1.6	2.9	0.0	1.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	532	0	473				0	955	426	0	955	
V/C Ratio(X)	0.64	0.00	0.38				0.00	0.28	0.49	0.00	0.18	
Avail Cap(c_a), veh/h	3213	0	2859				0	4196	1872	0	4196	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	8.0	0.0	7.3				0.0	7.6	8.1	0.0	7.4	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.5				0.0	0.2	0.9	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.5				0.0	0.2	0.4	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.3	0.0	7.8				0.0	7.8	9.0	0.0	7.5	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	
Approach Vol, veh/h		520						480			170	A
Approach Delay, s/veh		8.8						8.3			7.5	
Approach LOS		A						A			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		13.0		13.4		13.0						
Change Period (Y+Rc), s		5.9		5.5		5.9						
Max Green Setting (Gmax), s		31.1		47.5		31.1						
Max Q Clear Time (g_c+I1), s		4.9		6.4		3.0						
Green Ext Time (p_c), s		2.1		1.7		0.9						
Intersection Summary												
HCM 6th Ctrl Delay			8.4									
HCM 6th LOS			A									
Notes												

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	20	20	10	20	60
Future Vol, veh/h	30	20	20	10	20	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	20	20	10	20	60

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	125	25	0	0	30	0
Stage 1	25	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	870	1051	-	-	1583	-
Stage 1	998	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	859	1051	-	-	1583	-
Mov Cap-2 Maneuver	859	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	912	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	927	1583	-
HCM Lane V/C Ratio	-	-	0.054	0.013	-
HCM Control Delay (s)	-	-	9.1	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	30	20	410	40	20	220
v/c Ratio	0.07	0.06	0.16	0.02	0.05	0.10
Control Delay	17.1	9.7	10.8	3.7	17.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	9.7	10.8	3.7	17.4	1.4
Queue Length 50th (ft)	4	0	0	0	2	0
Queue Length 95th (ft)	30	15	147	22	23	15
Internal Link Dist (ft)	4683			3724	1647	
Turn Bay Length (ft)		175	300			175
Base Capacity (vph)	1518	1276	2587	1723	1363	2304
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.16	0.02	0.01	0.10

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	30	20	410	40	20	220
Future Volume (veh/h)	30	20	410	40	20	220
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	20	410	40	20	220
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	113	95	740	874	235	965
Arrive On Green	0.06	0.06	0.21	0.47	0.13	0.13
Sat Flow, veh/h	1870	1570	3456	1870	1781	2790
Grp Volume(v), veh/h	30	20	410	40	20	220
Grp Sat Flow(s),veh/h/ln	1870	1570	1728	1870	1781	1395
Q Serve(g_s), s	0.4	0.3	3.0	0.3	0.3	1.6
Cycle Q Clear(g_c), s	0.4	0.3	3.0	0.3	0.3	1.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	113	95	740	874	235	965
V/C Ratio(X)	0.27	0.21	0.55	0.05	0.09	0.23
Avail Cap(c_a), veh/h	1978	1660	2003	3423	1658	3194
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	12.7	10.0	4.1	10.8	6.6
Incr Delay (d2), s/veh	1.2	1.1	0.7	0.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.6	0.0	0.1	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.0	13.8	10.6	4.1	11.0	6.7
LnGrp LOS	B	B	B	A	B	A
Approach Vol, veh/h	50			450	240	
Approach Delay, s/veh	13.9			10.1	7.1	
Approach LOS	B			B	A	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.6	7.6				19.2		9.3
Change Period (Y+Rc), s	5.5	5.9				5.9		5.5
Max Green Setting (Gmax), s	16.5	30.1				52.1		26.5
Max Q Clear Time (g_c+I1), s	5.0	2.4				2.3		3.6
Green Ext Time (p_c), s	1.1	0.1				0.2		0.8

Intersection Summary	
HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	80	110	230	280	10	40	30	30	10	20	20
v/c Ratio	0.07	0.16	0.19	0.47	0.20	0.01	0.15	0.07	0.06	0.07	0.06	0.04
Control Delay	31.7	20.2	0.7	26.3	10.4	0.0	26.9	16.6	0.2	31.7	21.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	20.2	0.7	26.3	10.4	0.0	26.9	16.6	0.2	31.7	21.7	0.1
Queue Length 50th (ft)	2	10	0	24	0	0	5	4	0	2	3	0
Queue Length 95th (ft)	21	68	0	#259	180	0	50	31	0	21	25	0
Internal Link Dist (ft)		3724			3503			1141			1439	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	148	1031	960	487	1460	1247	318	1299	1148	148	1121	1023
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.08	0.11	0.47	0.19	0.01	0.13	0.02	0.03	0.07	0.02	0.02

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	80	110	230	280	10	40	30	30	10	20	20
Future Volume (veh/h)	10	80	110	230	280	10	40	30	30	10	20	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	80	110	230	280	10	40	30	30	10	20	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	265	223	297	562	475	48	157	132	14	121	101
Arrive On Green	0.01	0.14	0.14	0.17	0.30	0.30	0.03	0.08	0.08	0.01	0.06	0.06
Sat Flow, veh/h	1781	1870	1574	1781	1870	1580	1781	1870	1566	1781	1870	1565
Grp Volume(v), veh/h	10	80	110	230	280	10	40	30	30	10	20	20
Grp Sat Flow(s),veh/h/ln	1781	1870	1574	1781	1870	1580	1781	1870	1566	1781	1870	1565
Q Serve(g_s), s	0.2	1.5	2.5	4.7	4.7	0.2	0.8	0.6	0.7	0.2	0.4	0.5
Cycle Q Clear(g_c), s	0.2	1.5	2.5	4.7	4.7	0.2	0.8	0.6	0.7	0.2	0.4	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	14	265	223	297	562	475	48	157	132	14	121	101
V/C Ratio(X)	0.71	0.30	0.49	0.77	0.50	0.02	0.83	0.19	0.23	0.71	0.16	0.20
Avail Cap(c_a), veh/h	164	1136	956	539	1530	1292	351	1431	1199	164	1235	1033
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	14.6	15.1	15.2	10.9	9.4	18.4	16.2	16.3	18.8	16.8	16.8
Incr Delay (d2), s/veh	49.1	0.6	1.7	4.3	0.7	0.0	28.1	0.6	0.9	49.1	0.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.5	0.7	1.6	1.2	0.0	0.6	0.2	0.2	0.3	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.9	15.3	16.7	19.5	11.6	9.4	46.5	16.8	17.1	67.9	17.4	17.8
LnGrp LOS	E	B	B	B	B	A	D	B	B	E	B	B
Approach Vol, veh/h		200			520			100			50	
Approach Delay, s/veh		18.7			15.0			28.8			27.7	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	9.1	11.8	11.3	6.5	8.4	5.8	17.3
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	3.5	29.1	11.5	23.1	7.5	25.1	3.5	31.1
Max Q Clear Time (g_c+I1), s	2.2	2.7	6.7	4.5	2.8	2.5	2.2	6.7
Green Ext Time (p_c), s	0.0	0.2	0.3	0.6	0.0	0.1	0.0	1.4

Intersection Summary			
HCM 6th Ctrl Delay			18.2
HCM 6th LOS			B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	130	10	1410	580	50	200
v/c Ratio	0.45	0.04	0.78	0.22	0.24	0.40
Control Delay	40.4	18.7	23.4	4.2	40.3	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	18.7	23.4	4.2	40.3	8.3
Queue Length 50th (ft)	62	0	261	34	24	0
Queue Length 95th (ft)	149	15	#765	108	70	35
Internal Link Dist (ft)	3503			1595	3285	
Turn Bay Length (ft)		150	375			
Base Capacity (vph)	687	581	2185	3323	602	1056
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.02	0.65	0.17	0.08	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	130	10	1410	580	50	200
Future Volume (veh/h)	130	10	1410	580	50	200
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	130	10	1410	580	50	200
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	216	181	1697	2479	202	316
Arrive On Green	0.12	0.12	0.49	0.70	0.11	0.11
Sat Flow, veh/h	1870	1571	3456	3647	1781	2790
Grp Volume(v), veh/h	130	10	1410	580	50	200
Grp Sat Flow(s),veh/h/ln	1870	1571	1728	1777	1781	1395
Q Serve(g_s), s	4.0	0.3	21.2	3.6	1.5	4.1
Cycle Q Clear(g_c), s	4.0	0.3	21.2	3.6	1.5	4.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	216	181	1697	2479	202	316
V/C Ratio(X)	0.60	0.06	0.83	0.23	0.25	0.63
Avail Cap(c_a), veh/h	962	808	3067	5305	845	1324
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	23.7	13.2	3.3	24.4	25.5
Incr Delay (d2), s/veh	2.7	0.1	1.1	0.0	0.6	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.1	5.6	0.4	0.6	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.0	23.9	14.3	3.3	25.0	27.6
LnGrp LOS	C	C	B	A	C	C
Approach Vol, veh/h	140			1990	250	
Approach Delay, s/veh	27.7			11.1	27.1	
Approach LOS	C			B	C	

Timer - Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		12.3	35.1	12.9				48.0
Change Period (Y+Rc), s		5.5	5.5	5.9				5.9
Max Green Setting (Gmax), s		28.6	53.5	31.0				90.0
Max Q Clear Time (g_c+I1), s		6.1	23.2	6.0				5.6
Green Ext Time (p_c), s		0.8	6.4	0.6				3.7

Intersection Summary				
HCM 6th Ctrl Delay			13.8	
HCM 6th LOS			B	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	340	60	120	1910	20	30
v/c Ratio	0.15	0.06	1.03	0.65	0.08	0.13
Control Delay	7.2	2.5	134.8	7.8	34.4	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	2.5	134.8	7.8	34.4	14.7
Queue Length 50th (ft)	29	0	~49	181	7	0
Queue Length 95th (ft)	85	18	#305	648	37	27
Internal Link Dist (ft)	1595			3525	10448	
Turn Bay Length (ft)		150	180			175
Base Capacity (vph)	3332	1454	116	3382	908	807
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.04	1.03	0.56	0.02	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	340	60	120	1910	20	30
Future Volume (veh/h)	340	60	120	1910	20	30
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	340	60	120	1910	20	30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2124	946	129	2728	54	48
Arrive On Green	0.60	0.60	0.07	0.77	0.03	0.03
Sat Flow, veh/h	3647	1582	1781	3647	1781	1585
Grp Volume(v), veh/h	340	60	120	1910	20	30
Grp Sat Flow(s),veh/h/ln	1777	1582	1781	1777	1781	1585
Q Serve(g_s), s	2.4	0.9	3.8	15.2	0.6	1.1
Cycle Q Clear(g_c), s	2.4	0.9	3.8	15.2	0.6	1.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2124	946	129	2728	54	48
V/C Ratio(X)	0.16	0.06	0.93	0.70	0.37	0.62
Avail Cap(c_a), veh/h	6109	2720	129	6713	1006	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.1	4.7	26.0	3.3	26.9	27.1
Incr Delay (d2), s/veh	0.0	0.0	57.4	0.3	4.1	12.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.2	3.4	0.1	0.3	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.1	4.8	83.5	3.6	31.0	39.4
LnGrp LOS	A	A	F	A	C	D
Approach Vol, veh/h	400			2030	50	
Approach Delay, s/veh	5.0			8.3	36.1	
Approach LOS	A			A	D	

Timer - Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		7.2	9.6	39.7				49.3
Change Period (Y+Rc), s		5.5	5.5	5.9				5.9
Max Green Setting (Gmax), s		31.9	4.1	97.1				106.7
Max Q Clear Time (g_c+I1), s		3.1	5.8	4.4				17.2
Green Ext Time (p_c), s		0.1	0.0	2.2				26.1

Intersection Summary	
HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	260	80	600	300	80	990
v/c Ratio	0.22	0.05	0.54	0.19	0.16	0.79
Control Delay	12.9	0.1	15.4	0.3	9.4	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	0.1	15.4	0.3	9.4	9.9
Queue Length 50th (ft)	13	0	35	0	11	17
Queue Length 95th (ft)	89	0	204	0	35	155
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3350	1550	3347	1550	1659	2544
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.05	0.18	0.19	0.05	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	260	80	0	600	300	0	0	0	80	0	990
Future Volume (vph)	0	260	80	0	600	300	0	0	0	80	0	990
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.4	4.0		6.8	4.0				4.4		4.4
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	260	80	0	600	300	0	0	0	80	0	990
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	547
Lane Group Flow (vph)	0	260	80	0	600	300	0	0	0	80	0	443
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		13.0	40.5		12.6	40.5				16.7		10.1
Effective Green, g (s)		13.0	40.5		12.6	40.5				16.7		10.1
Actuated g/C Ratio		0.32	1.00		0.31	1.00				0.41		0.25
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1135	1550		1101	1550				729		695
v/s Ratio Prot		0.07			c0.17					0.05		c0.16
v/s Ratio Perm			0.05			c0.19						
v/c Ratio		0.23	0.05		0.54	0.19				0.11		0.64
Uniform Delay, d1		10.1	0.0		11.6	0.0				7.3		13.6
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.0	0.1		0.3	0.3				0.0		1.4
Delay (s)		10.1	0.1		11.9	0.3				7.3		15.0
Level of Service		B	A		B	A				A		B
Approach Delay (s)		7.7			8.0			0.0			14.4	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	15.6
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	160	90	590	220	229	231	130
v/c Ratio	0.16	0.06	0.62	0.38	0.61	0.61	0.09
Control Delay	16.4	0.1	21.3	5.7	28.1	28.1	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	0.1	21.3	5.7	28.1	28.1	1.8
Queue Length 50th (ft)	15	0	70	0	56	56	0
Queue Length 95th (ft)	58	0	200	51	192	194	11
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3368	1550	3360	1468	1195	1200	2605
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.06	0.18	0.15	0.19	0.19	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	90	0	590	220	450	10	130	0	0	0
Future Volume (vph)	0	160	90	0	590	220	450	10	130	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.0		5.8	5.8	5.5	5.5	5.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		3539	1550		3539	1546	1681	1689	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		3539	1550		3539	1546	1681	1689	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	160	90	0	590	220	450	10	130	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	159	0	0	65	0	0	0
Lane Group Flow (vph)	0	160	90	0	590	61	229	231	65	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		15.1	51.2		14.2	14.2	11.8	11.8	25.7			
Effective Green, g (s)		15.1	51.2		14.2	14.2	11.8	11.8	25.7			
Actuated g/C Ratio		0.29	1.00		0.28	0.28	0.23	0.23	0.50			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		1043	1550		981	428	387	389	1398			
v/s Ratio Prot		0.05			c0.17		0.14	c0.14	0.02			
v/s Ratio Perm			c0.06			0.04						
v/c Ratio		0.15	0.06		0.60	0.14	0.59	0.59	0.05			
Uniform Delay, d1		13.3	0.0		16.0	13.9	17.6	17.6	6.5			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.1		0.7	0.1	1.6	1.6	0.0			
Delay (s)		13.4	0.1		16.8	14.0	19.2	19.2	6.5			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		8.6			16.0			16.4			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	51.2	Sum of lost time (s)	16.8
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	640	120	200	1300	50	170	150	150	100	90	40
v/c Ratio	0.69	0.47	0.18	0.98	0.87	0.07	0.81	0.42	0.36	1.52	0.34	0.11
Control Delay	68.7	22.4	2.9	98.9	31.2	0.2	68.9	32.5	6.9	331.5	35.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.7	22.4	2.9	98.9	31.2	0.2	68.9	32.5	6.9	331.5	35.2	0.7
Queue Length 50th (ft)	46	124	0	103	301	0	88	69	0	~71	43	0
Queue Length 95th (ft)	#149	236	24	#295	#610	0	#264	119	42	#202	84	0
Internal Link Dist (ft)		745			1992			1063			3284	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	130	1349	682	204	1498	741	211	739	711	66	629	627
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.47	0.18	0.98	0.87	0.07	0.81	0.20	0.21	1.52	0.14	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	640	120	200	1300	50	170	150	150	100	90	40
Future Volume (veh/h)	90	640	120	200	1300	50	170	150	150	100	90	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	640	0	200	1300	0	170	150	150	100	90	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	115	1283		232	1515		193	295	249	75	171	144
Arrive On Green	0.06	0.36	0.00	0.13	0.43	0.00	0.11	0.16	0.16	0.04	0.09	0.09
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1579	1781	1870	1575
Grp Volume(v), veh/h	90	640	0	200	1300	0	170	150	150	100	90	40
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1579	1781	1870	1575
Q Serve(g_s), s	3.7	10.4	0.0	8.1	24.4	0.0	6.9	5.4	6.5	3.1	3.4	1.7
Cycle Q Clear(g_c), s	3.7	10.4	0.0	8.1	24.4	0.0	6.9	5.4	6.5	3.1	3.4	1.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	115	1283		232	1515		193	295	249	75	171	144
V/C Ratio(X)	0.78	0.50		0.86	0.86		0.88	0.51	0.60	1.34	0.53	0.28
Avail Cap(c_a), veh/h	147	1522		232	1691		193	834	704	75	710	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	18.4	0.0	31.4	19.1	0.0	32.4	28.4	28.9	35.3	32.0	31.2
Incr Delay (d2), s/veh	18.2	0.3	0.0	26.7	4.3	0.0	34.0	1.4	2.3	217.6	2.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.6	0.0	4.8	8.8	0.0	4.5	2.3	2.4	5.7	1.5	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.2	18.7	0.0	58.2	23.4	0.0	66.4	29.8	31.2	252.9	34.5	32.3
LnGrp LOS	D	B		E	C		E	C	C	F	C	C
Approach Vol, veh/h		730	A		1500	A		470			230	
Approach Delay, s/veh		22.8			28.1			43.5			129.1	
Approach LOS		C			C			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	17.5	15.1	32.5	13.5	12.6	10.3	37.3
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	3.1	32.9	9.6	31.6	8.0	28.0	6.1	35.1
Max Q Clear Time (g_c+I1), s	5.1	8.5	10.1	12.4	8.9	5.4	5.7	26.4
Green Ext Time (p_c), s	0.0	1.1	0.0	3.6	0.0	0.4	0.0	5.0

Intersection Summary	
HCM 6th Ctrl Delay	37.2
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	160	510	115	385	1390	280	10	1030	150	70	760	510
v/c Ratio	0.47	0.33	0.20	0.78	0.77	0.43	0.10	0.71	0.27	0.28	0.41	0.67
Control Delay	54.7	30.3	2.4	60.0	36.5	15.5	62.2	38.5	5.7	56.8	26.5	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	30.3	2.4	60.0	36.5	15.5	62.2	38.5	5.7	56.8	26.5	16.0
Queue Length 50th (ft)	58	102	0	145	326	62	3	254	0	25	145	117
Queue Length 95th (ft)	103	153	17	#276	465	163	14	323	44	55	212	276
Internal Link Dist (ft)		1627			1756			1585			1050	
Turn Bay Length (ft)	450		450	400		400	400		400	400		400
Base Capacity (vph)	579	2181	759	496	2062	726	99	2117	741	314	2436	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.23	0.15	0.78	0.67	0.39	0.10	0.49	0.20	0.22	0.31	0.56

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	510	115	385	1390	280	10	1030	150	70	760	510
Future Volume (veh/h)	160	510	115	385	1390	280	10	1030	150	70	760	510
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	510	115	385	1390	280	10	1030	150	70	760	510
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	1420	440	448	1743	540	25	1764	547	118	1902	590
Arrive On Green	0.07	0.28	0.28	0.13	0.34	0.34	0.01	0.35	0.35	0.03	0.37	0.37
Sat Flow, veh/h	3456	5106	1582	3456	5106	1582	3456	5106	1582	3456	5106	1582
Grp Volume(v), veh/h	160	510	115	385	1390	280	10	1030	150	70	760	510
Grp Sat Flow(s),veh/h/ln	1728	1702	1582	1728	1702	1582	1728	1702	1582	1728	1702	1582
Q Serve(g_s), s	4.9	8.6	6.1	11.7	26.4	15.2	0.3	17.7	7.4	2.1	11.8	32.0
Cycle Q Clear(g_c), s	4.9	8.6	6.1	11.7	26.4	15.2	0.3	17.7	7.4	2.1	11.8	32.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	1420	440	448	1743	540	25	1764	547	118	1902	590
V/C Ratio(X)	0.70	0.36	0.26	0.86	0.80	0.52	0.40	0.58	0.27	0.59	0.40	0.87
Avail Cap(c_a), veh/h	564	2119	656	483	2000	620	97	2057	637	306	2366	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.0	31.0	30.1	45.7	32.0	28.3	53.0	28.8	25.4	51.0	24.8	31.2
Incr Delay (d2), s/veh	3.8	0.2	0.3	13.8	2.1	0.8	10.1	0.3	0.3	4.6	0.1	8.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	3.3	2.2	5.6	10.3	5.4	0.2	6.7	2.6	1.0	4.4	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.8	31.2	30.5	59.5	34.0	29.0	63.1	29.1	25.6	55.7	24.9	40.1
LnGrp LOS	D	C	C	E	C	C	E	C	C	E	C	D
Approach Vol, veh/h		785			2055			1190			1340	
Approach Delay, s/veh		35.5			38.1			28.9			32.3	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	43.0	19.4	35.7	6.3	45.9	12.6	42.5				
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9				
Max Green Setting (Gmax), s	9.5	43.2	15.0	44.5	3.0	49.7	17.5	42.0				
Max Q Clear Time (g_c+I1), s	4.1	19.7	13.7	10.6	2.3	34.0	6.9	28.4				
Green Ext Time (p_c), s	0.1	7.2	0.2	3.5	0.0	5.8	0.3	7.8				
Intersection Summary												
HCM 6th Ctrl Delay			34.3									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	630	10	180	2290	520	10	30	30	130	50	70
v/c Ratio	0.56	0.25	0.01	3.00	1.04	0.60	0.08	0.13	0.10	0.55	0.10	0.14
Control Delay	58.7	16.7	0.0	961.1	58.0	11.3	48.2	36.7	0.6	48.7	24.2	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	16.7	0.0	961.1	58.0	11.3	48.2	36.7	0.6	48.7	24.2	2.2
Queue Length 50th (ft)	48	68	0	~172	~493	55	5	16	0	67	20	0
Queue Length 95th (ft)	#165	169	0	#409	#997	254	26	42	0	160	52	13
Internal Link Dist (ft)		760			4518			633			10448	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	161	2493	827	60	2204	869	263	767	728	815	1348	1157
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.25	0.01	3.00	1.04	0.60	0.04	0.04	0.04	0.16	0.04	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	630	10	180	2290	520	10	30	30	130	50	70
Future Volume (veh/h)	90	630	10	180	2290	520	10	30	30	130	50	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	630	10	180	2290	520	10	30	30	130	50	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	2619	811	69	2484	769	13	118	99	179	292	246
Arrive On Green	0.07	0.51	0.51	0.04	0.49	0.49	0.01	0.06	0.06	0.10	0.16	0.16
Sat Flow, veh/h	1781	5106	1582	1781	5106	1582	1781	1870	1570	1781	1870	1579
Grp Volume(v), veh/h	90	630	10	180	2290	520	10	30	30	130	50	70
Grp Sat Flow(s),veh/h/ln	1781	1702	1582	1781	1702	1582	1781	1870	1570	1781	1870	1579
Q Serve(g_s), s	3.9	5.3	0.2	3.0	32.5	19.6	0.4	1.2	1.4	5.5	1.8	3.0
Cycle Q Clear(g_c), s	3.9	5.3	0.2	3.0	32.5	19.6	0.4	1.2	1.4	5.5	1.8	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	116	2619	811	69	2484	769	13	118	99	179	292	246
V/C Ratio(X)	0.78	0.24	0.01	2.62	0.92	0.68	0.75	0.25	0.30	0.73	0.17	0.28
Avail Cap(c_a), veh/h	183	2826	876	69	2498	774	300	869	730	926	1527	1289
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	10.5	9.3	37.4	18.6	15.3	38.6	34.7	34.8	34.0	28.5	29.0
Incr Delay (d2), s/veh	10.6	0.0	0.0	770.6	6.3	2.3	57.6	1.1	1.7	5.5	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.6	0.1	15.9	11.3	6.0	0.4	0.5	0.5	2.5	0.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	10.6	9.3	808.0	24.9	17.6	96.2	35.9	36.5	39.5	28.8	29.6
LnGrp LOS	D	B	A	F	C	B	F	D	D	D	C	C
Approach Vol, veh/h		730			2990			70			250	
Approach Delay, s/veh		15.0			70.8			44.8			34.6	
Approach LOS		B			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	10.2	8.5	45.8	6.1	17.4	10.6	43.8				
Change Period (Y+Rc), s	5.5	5.3	5.5	5.9	5.5	5.3	5.5	5.9				
Max Green Setting (Gmax), s	40.5	36.2	3.0	43.1	13.1	63.6	8.0	38.1				
Max Q Clear Time (g_c+I1), s	7.5	3.4	5.0	7.3	2.4	5.0	5.9	34.5				
Green Ext Time (p_c), s	0.3	0.2	0.0	4.0	0.0	0.5	0.0	3.4				
Intersection Summary												
HCM 6th Ctrl Delay			58.0									
HCM 6th LOS			E									
Notes												

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1020	470	2420	820	360	670
v/c Ratio	0.42	0.48	1.00	0.88	0.51	1.04
Control Delay	16.2	3.2	43.7	24.3	23.6	73.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	3.2	43.7	24.3	23.6	73.7
Queue Length 50th (ft)	134	0	~488	249	151	~403
Queue Length 95th (ft)	168	50	#627	#529	234	#617
Internal Link Dist (ft)	4518		937			
Turn Bay Length (ft)		400		100		440
Base Capacity (vph)	2412	979	2412	936	706	644
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.48	1.00	0.88	0.51	1.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1020	470	0	2420	820	0	0	0	360	0	670
Future Volume (veh/h)	0	1020	470	0	2420	820	0	0	0	360	0	670
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	1020	0	0	2420	0				360	0	670
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2423		0	2423					711	0	632
Arrive On Green	0.00	0.47	0.00	0.00	0.47	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	5274	1585	0	5274	1585				1781	0	1585
Grp Volume(v), veh/h	0	1020	0	0	2420	0				360	0	670
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585				1781	0	1585
Q Serve(g_s), s	0.0	11.8	0.0	0.0	42.6	0.0				13.7	0.0	35.9
Cycle Q Clear(g_c), s	0.0	11.8	0.0	0.0	42.6	0.0				13.7	0.0	35.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2423		0	2423					711	0	632
V/C Ratio(X)	0.00	0.42		0.00	1.00					0.51	0.00	1.06
Avail Cap(c_a), veh/h	0	2423		0	2423					711	0	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.5	0.0	0.0	23.6	0.0				20.4	0.0	27.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	18.0	0.0				0.6	0.0	52.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	0.0	0.0	18.0	0.0				5.5	0.0	21.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.6	0.0	0.0	41.7	0.0				21.0	0.0	79.7
LnGrp LOS	A	B		A	D					C	A	F
Approach Vol, veh/h		1020	A		2420	A					1030	
Approach Delay, s/veh		15.6			41.7						59.2	
Approach LOS		B			D						E	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				48.6		41.4		48.6				
Change Period (Y+Rc), s				5.9		5.5		5.9				
Max Green Setting (Gmax), s				42.7		35.9		42.7				
Max Q Clear Time (g_c+I1), s				13.8		37.9		44.6				
Green Ext Time (p_c), s				6.9		0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		39.8
HCM 6th LOS		D

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	430	370	2380	210	1010	540
v/c Ratio	0.21	0.24	1.16	0.13	1.10	0.35
Control Delay	23.3	0.4	110.8	0.2	88.5	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	0.4	110.8	0.2	88.5	0.6
Queue Length 50th (ft)	77	0	~798	0	~885	0
Queue Length 95th (ft)	102	0	#891	0	#1136	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	2076	1550	2055	1583	921	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.24	1.16	0.13	1.10	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↰		↗			
Traffic Volume (veh/h)	0	430	370	0	2380	210	1010	0	540	0	0	0
Future Volume (veh/h)	0	430	370	0	2380	210	1010	0	540	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	430	0	0	2380	0	1010	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2064		0	2064		928	0				
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.00	0.52	0.00	0.00			
Sat Flow, veh/h	0	5274	1585	0	5274	1585	1781	0	1585			
Grp Volume(v), veh/h	0	430	0	0	2380	0	1010	0	0			
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	6.6	0.0	0.0	48.5	0.0	62.5	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	6.6	0.0	0.0	48.5	0.0	62.5	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2064		0	2064		928	0				
V/C Ratio(X)	0.00	0.21		0.00	1.15		1.09	0.00				
Avail Cap(c_a), veh/h	0	2085		0	2064		928	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	23.3	0.0	0.0	35.8	0.0	28.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	75.0	0.0	56.7	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.5	0.0	0.0	32.6	0.0	39.5	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	23.3	0.0	0.0	110.8	0.0	85.4	0.0	0.0			
LnGrp LOS	A	C		A	F		F	A				
Approach Vol, veh/h		430	A		2380	A		1010	A			
Approach Delay, s/veh		23.3			110.8			85.4				
Approach LOS		C			F			F				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		54.0				54.0		66.0				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		48.5				* 49		62.5				
Max Q Clear Time (g_c+I1), s		50.5				8.6		64.5				
Green Ext Time (p_c), s		0.0				2.1		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			94.2									
HCM 6th LOS			F									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	90	0	2450	0	890	190	0	1760	550
Future Vol, veh/h	0	0	0	90	0	2450	0	890	190	0	1760	550
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	90	0	2450	0	890	190	0	1760	550

Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				1770	-	-	-	0	-	-	-	0
Stage 1				890	-	-	-	-	-	-	-	-
Stage 2				880	-	-	-	-	-	-	-	-
Critical Hdwy				6.63	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1				5.43	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.83	-	-	-	-	-	-	-	-
Follow-up Hdwy				3.519	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver				~ 83	0	0	0	-	0	0	-	0
Stage 1				400	0	0	0	-	0	0	-	0
Stage 2				367	0	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver				~ 83	0	-	-	-	-	-	-	-
Mov Cap-2 Maneuver				~ 83	0	-	-	-	-	-	-	-
Stage 1				400	0	-	-	-	-	-	-	-
Stage 2				367	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	214.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	83	-	-
HCM Lane V/C Ratio	-	1.084	-	-
HCM Control Delay (s)	-	214.1	0	-
HCM Lane LOS	-	F	A	-
HCM 95th %tile Q(veh)	-	6.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	50.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	760	100	0	350	110	1710
Future Vol, veh/h	760	100	0	350	110	1710
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	760	100	0	350	110	1710

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	285	110	110	0	-	0
Stage 1	110	-	-	-	-	-
Stage 2	175	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 693	943	1479	-	-	0
Stage 1	914	-	-	-	-	0
Stage 2	838	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 693	943	1479	-	-	-
Mov Cap-2 Maneuver	~ 693	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	78.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1479	-	693	943	-
HCM Lane V/C Ratio	-	-	1.097	0.106	-
HCM Control Delay (s)	0	-	87.1	9.3	-
HCM Lane LOS	A	-	F	A	-
HCM 95th %tile Q(veh)	0	-	21.6	0.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	40	50	20	100	110
Future Vol, veh/h	20	40	50	20	100	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	40	50	20	100	110

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	370	60	0	0	70	0
Stage 1	60	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	630	1005	-	-	1531	-
Stage 1	963	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	586	1005	-	-	1531	-
Mov Cap-2 Maneuver	586	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	692	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	3.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	812	1531	-
HCM Lane V/C Ratio	-	-	0.074	0.065	-
HCM Control Delay (s)	-	-	9.8	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	10	60	40	0	120
Future Vol, veh/h	80	10	60	40	0	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	10	60	40	0	120

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	200	80	0	0	100	0
Stage 1	80	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	789	980	-	-	1493	-
Stage 1	943	-	-	-	-	-
Stage 2	905	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	789	980	-	-	1493	-
Mov Cap-2 Maneuver	789	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	905	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	806	1493	-
HCM Lane V/C Ratio	-	-	0.112	-	-
HCM Control Delay (s)	-	-	10	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	290	150	30	170	190
Future Vol, veh/h	40	290	150	30	170	190
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	290	150	30	170	190
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	11.8	10.2	15.7
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	47%
Vol Thru, %	100%	0%	0%	0%	53%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	30	40	290	360
LT Vol	0	0	40	0	170
Through Vol	150	0	0	0	190
RT Vol	0	30	0	290	0
Lane Flow Rate	150	30	40	290	360
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.248	0.044	0.073	0.43	0.563
Departure Headway (Hd)	5.947	5.237	6.548	5.336	5.628
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	605	684	548	676	641
Service Time	3.676	2.966	4.278	3.065	3.651
HCM Lane V/C Ratio	0.248	0.044	0.073	0.429	0.562
HCM Control Delay	10.6	8.2	9.8	12.1	15.7
HCM Lane LOS	B	A	A	B	C
HCM 95th-tile Q	1	0.1	0.2	2.2	3.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	30	180	20	150	50	190	270	90	890
v/c Ratio	0.19	0.07	0.35	0.18	0.39	0.11	0.59	0.14	0.37	0.64
Control Delay	36.6	18.2	5.4	39.5	25.2	0.5	38.4	17.5	33.9	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	18.2	5.4	39.5	25.2	0.5	38.4	17.5	33.9	23.1
Queue Length 50th (ft)	9	8	0	6	44	0	58	20	27	84
Queue Length 95th (ft)	45	29	41	35	106	0	#233	65	96	214
Internal Link Dist (ft)		3313			367			2142		3285
Turn Bay Length (ft)	175		175	175		175	400		400	
Base Capacity (vph)	161	1045	955	112	994	911	326	2013	310	1840
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.03	0.19	0.18	0.15	0.05	0.58	0.13	0.29	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	30	180	20	150	50	190	250	20	90	780	110
Future Volume (veh/h)	30	30	180	20	150	50	190	250	20	90	780	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	30	180	20	150	50	190	250	20	90	780	110
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	341	288	26	266	225	240	1616	127	116	1201	168
Arrive On Green	0.05	0.18	0.18	0.01	0.14	0.14	0.13	0.33	0.33	0.07	0.27	0.27
Sat Flow, veh/h	1781	1870	1580	1781	1870	1578	1781	4825	379	1781	4524	633
Grp Volume(v), veh/h	30	30	180	20	150	50	190	175	95	90	585	305
Grp Sat Flow(s),veh/h/ln	1781	1870	1580	1781	1870	1578	1781	1702	1801	1781	1702	1754
Q Serve(g_s), s	0.9	0.7	5.7	0.6	4.0	1.5	5.6	1.9	2.0	2.7	8.2	8.3
Cycle Q Clear(g_c), s	0.9	0.7	5.7	0.6	4.0	1.5	5.6	1.9	2.0	2.7	8.2	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.36
Lane Grp Cap(c), veh/h	97	341	288	26	266	225	240	1140	603	116	904	466
V/C Ratio(X)	0.31	0.09	0.62	0.78	0.56	0.22	0.79	0.15	0.16	0.77	0.65	0.65
Avail Cap(c_a), veh/h	175	1132	956	122	1077	909	354	1378	729	337	1346	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	18.3	20.3	26.5	21.5	20.5	22.6	12.6	12.6	24.8	17.5	17.6
Incr Delay (d2), s/veh	1.8	0.1	2.2	38.6	1.9	0.5	7.3	0.1	0.1	10.4	0.8	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	2.0	0.5	1.7	0.5	2.4	0.6	0.6	1.3	2.6	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	18.4	22.5	65.0	23.4	21.0	29.8	12.6	12.7	35.2	18.3	19.1
LnGrp LOS	C	B	C	E	C	C	C	B	B	D	B	B
Approach Vol, veh/h		240			220			460			980	
Approach Delay, s/veh		22.5			26.6			19.7			20.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	23.9	6.3	14.6	12.8	20.2	8.4	12.5
Change Period (Y+Rc), s	5.5	5.9	5.5	4.8	5.5	5.9	5.5	4.8
Max Green Setting (Gmax), s	10.2	21.8	3.7	32.6	10.7	21.3	5.3	31.0
Max Q Clear Time (g_c+I1), s	4.7	4.0	2.6	7.7	7.6	10.3	2.9	6.0
Green Ext Time (p_c), s	0.1	1.2	0.0	0.7	0.1	3.8	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	30	10	10	580	1060
v/c Ratio	0.08	0.03	0.04	0.14	0.26
Control Delay	17.0	10.3	27.4	4.5	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	10.3	27.4	4.5	7.2
Queue Length 50th (ft)	4	0	1	0	0
Queue Length 95th (ft)	28	10	21	82	206
Internal Link Dist (ft)	2842			686	2142
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	1454	1285	300	4492	4055
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.03	0.13	0.26

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	10	10	580	990	70
Future Volume (veh/h)	30	10	10	580	990	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	10	10	580	990	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	50	45	14	3097	2056	145
Arrive On Green	0.03	0.03	0.01	0.61	0.42	0.42
Sat Flow, veh/h	1781	1585	1781	5274	5036	344
Grp Volume(v), veh/h	30	10	10	580	692	368
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1808
Q Serve(g_s), s	0.5	0.2	0.2	1.6	4.6	4.6
Cycle Q Clear(g_c), s	0.5	0.2	0.2	1.6	4.6	4.6
Prop In Lane	1.00	1.00	1.00			0.19
Lane Grp Cap(c), veh/h	50	45	14	3097	1437	763
V/C Ratio(X)	0.60	0.22	0.70	0.19	0.48	0.48
Avail Cap(c_a), veh/h	1969	1752	371	7216	3502	1859
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	14.8	15.4	2.7	6.5	6.5
Incr Delay (d2), s/veh	10.9	2.5	47.8	0.0	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.2	0.0	0.5	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.9	17.3	63.2	2.8	6.8	7.0
LnGrp LOS	C	B	E	A	A	A
Approach Vol, veh/h	40			590	1060	
Approach Delay, s/veh	23.7			3.8	6.9	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		24.8		6.4	5.7	19.1
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		44.1		34.5	6.5	32.1
Max Q Clear Time (g_c+I1), s		3.6		2.5	2.2	6.6
Green Ext Time (p_c), s		3.7		0.1	0.0	6.5

Intersection Summary			
HCM 6th Ctrl Delay			6.2
HCM 6th LOS			A

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	70	250	600	840	960
v/c Ratio	0.22	0.52	1.24	0.26	0.69
Control Delay	23.2	7.2	149.4	6.8	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	7.2	149.4	6.8	23.2
Queue Length 50th (ft)	23	0	~265	33	98
Queue Length 95th (ft)	52	45	#720	132	225
Internal Link Dist (ft)	1671			1050	4086
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	999	991	485	3578	1713
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.25	1.24	0.23	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	250	600	840	750	210
Future Volume (veh/h)	70	250	600	840	750	210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	250	600	840	750	210
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	352	313	483	3170	1041	288
Arrive On Green	0.20	0.20	0.27	0.62	0.26	0.26
Sat Flow, veh/h	1781	1585	1781	5274	4140	1100
Grp Volume(v), veh/h	70	250	600	840	642	318
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1667
Q Serve(g_s), s	2.1	9.4	17.0	4.7	10.8	10.9
Cycle Q Clear(g_c), s	2.1	9.4	17.0	4.7	10.8	10.9
Prop In Lane	1.00	1.00	1.00			0.66
Lane Grp Cap(c), veh/h	352	313	483	3170	892	437
V/C Ratio(X)	0.20	0.80	1.24	0.26	0.72	0.73
Avail Cap(c_a), veh/h	994	884	483	3549	1145	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	24.0	22.9	5.4	21.0	21.1
Incr Delay (d2), s/veh	0.3	4.7	125.9	0.0	1.6	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	22.6	0.9	3.7	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.3	28.7	148.8	5.4	22.6	24.6
LnGrp LOS	C	C	F	A	C	C
Approach Vol, veh/h	320			1440	960	
Approach Delay, s/veh	27.1			65.2	23.3	
Approach LOS	C			E	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		44.8		17.9	22.5	22.3
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		43.6		35.0	17.0	21.1
Max Q Clear Time (g_c+I1), s		6.7		11.4	19.0	12.9
Green Ext Time (p_c), s		5.7		1.0	0.0	3.4

Intersection Summary			
HCM 6th Ctrl Delay			45.9
HCM 6th LOS			D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	130	470	450	310	380	80	1190	100	90	1230
v/c Ratio	0.35	0.17	0.93	0.93	0.48	0.53	0.73	0.92	0.18	0.78	0.94
Control Delay	70.3	35.8	48.9	78.9	31.8	10.6	96.2	55.1	0.7	99.1	57.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	35.8	48.9	78.9	31.8	10.6	96.2	55.1	0.7	99.1	57.7
Queue Length 50th (ft)	24	42	213	189	195	53	34	348	0	38	363
Queue Length 95th (ft)	59	69	#405	#310	284	149	#80	#468	0	#90	#493
Internal Link Dist (ft)		450			475			2094			1585
Turn Bay Length (ft)	375		375	425		425	400		400	400	
Base Capacity (vph)	91	992	587	483	691	745	109	1298	546	116	1309
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.13	0.80	0.93	0.45	0.51	0.73	0.92	0.18	0.78	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	130	470	450	310	380	80	1190	100	90	1220	10
Future Volume (vph)	30	130	470	450	310	380	80	1190	100	90	1220	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	0.97	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	3185	1405	3090	1676	1405	3090	4577	1404	3090	4571	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	3185	1405	3090	1676	1405	3090	4577	1404	3090	4571	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	130	470	450	310	380	80	1190	100	90	1220	10
RTOR Reduction (vph)	0	0	160	0	0	175	0	0	72	0	1	0
Lane Group Flow (vph)	30	130	310	450	310	205	80	1190	28	90	1229	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	4.0	32.5	32.5	19.2	47.7	47.7	4.3	34.8	34.8	4.6	35.1	
Effective Green, g (s)	4.0	32.5	32.5	19.2	47.7	47.7	4.3	34.8	34.8	4.6	35.1	
Actuated g/C Ratio	0.03	0.26	0.26	0.15	0.38	0.38	0.03	0.28	0.28	0.04	0.28	
Clearance Time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	51	829	365	475	640	537	106	1276	391	113	1285	
v/s Ratio Prot	0.02	0.04		c0.15	0.18		0.03	0.26		c0.03	c0.27	
v/s Ratio Perm			c0.22			0.15			0.02			
v/c Ratio	0.59	0.16	0.85	0.95	0.48	0.38	0.75	0.93	0.07	0.80	0.96	
Uniform Delay, d1	59.6	35.6	43.8	52.3	29.2	27.9	59.7	43.9	33.1	59.6	44.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.1	0.1	16.5	28.2	0.6	0.5	25.8	12.3	0.1	31.0	15.7	
Delay (s)	75.7	35.7	60.3	80.5	29.8	28.3	85.6	56.2	33.2	90.6	59.8	
Level of Service	E	D	E	F	C	C	F	E	C	F	E	
Approach Delay (s)		55.9			49.3			56.2			61.9	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	124.8	Sum of lost time (s)	28.1
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	10	1310	780	250	1360	790
v/c Ratio	0.01	0.96	0.54	0.16	0.66	0.72
Control Delay	13.8	38.3	21.3	0.2	22.7	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	38.3	21.3	0.2	22.7	5.8
Queue Length 50th (ft)	3	368	167	0	216	0
Queue Length 95th (ft)	12	#550	222	0	265	71
Internal Link Dist (ft)			551		2094	
Turn Bay Length (ft)						400
Base Capacity (vph)	825	1370	1552	1583	2230	1121
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.96	0.50	0.16	0.61	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	10	0	1310	0	780	250	0	1360	790
Future Volume (veh/h)	0	0	0	10	0	1310	0	780	250	0	1360	790
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				10	0	1310	0	780	0	0	1360	790
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				802	0	1255	0	1504		0	2162	669
Arrive On Green				0.45	0.00	0.45	0.00	0.42	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1781	0	2790	0	3647	1585	0	5274	1581
Grp Volume(v), veh/h				10	0	1310	0	780	0	0	1360	790
Grp Sat Flow(s),veh/h/ln				1781	0	1395	0	1777	1585	0	1702	1581
Q Serve(g_s), s				0.3	0.0	40.5	0.0	14.6	0.0	0.0	18.8	38.1
Cycle Q Clear(g_c), s				0.3	0.0	40.5	0.0	14.6	0.0	0.0	18.8	38.1
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				802	0	1255	0	1504		0	2162	669
V/C Ratio(X)				0.01	0.00	1.04	0.00	0.52		0.00	0.63	1.18
Avail Cap(c_a), veh/h				802	0	1255	0	1504		0	2162	669
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.7	0.0	24.8	0.0	19.2	0.0	0.0	20.4	26.0
Incr Delay (d2), s/veh				0.0	0.0	37.5	0.0	0.3	0.0	0.0	0.6	95.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	0.0	18.7	0.0	5.3	0.0	0.0	6.5	29.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.7	0.0	62.3	0.0	19.5	0.0	0.0	21.0	121.9
LnGrp LOS				B	A	F	A	B		A	C	F
Approach Vol, veh/h					1320			780	A		2150	
Approach Delay, s/veh					61.9			19.5			58.1	
Approach LOS					E			B			E	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		44.0				44.0		46.0				
Change Period (Y+Rc), s		5.9				5.9		5.5				
Max Green Setting (Gmax), s		38.1				38.1		40.5				
Max Q Clear Time (g_c+I1), s		16.6				40.1		42.5				
Green Ext Time (p_c), s		4.6				0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	52.2
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	530	80	550	90	100	1310
v/c Ratio	0.69	0.11	0.51	0.17	0.09	0.85
Control Delay	16.2	2.9	15.9	5.0	13.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	2.9	15.9	5.0	13.2	6.8
Queue Length 50th (ft)	100	0	57	0	8	0
Queue Length 95th (ft)	228	18	131	27	29	#25
Internal Link Dist (ft)			529		551	
Turn Bay Length (ft)						
Base Capacity (vph)	1659	1468	2553	1167	2553	1550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.05	0.22	0.08	0.04	0.85

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	530	0	80	0	0	0	0	550	90	0	100	1310
Future Volume (veh/h)	530	0	80	0	0	0	0	550	90	0	100	1310
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	530	0	80				0	550	90	0	100	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	676	0	602				0	1028	458	0	1028	
Arrive On Green	0.38	0.00	0.38				0.00	0.29	0.29	0.00	0.29	0.00
Sat Flow, veh/h	1781	0	1585				0	3647	1585	0	3647	1585
Grp Volume(v), veh/h	530	0	80				0	550	90	0	100	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	0	1777	1585
Q Serve(g_s), s	9.0	0.0	1.1				0.0	4.5	1.5	0.0	0.7	0.0
Cycle Q Clear(g_c), s	9.0	0.0	1.1				0.0	4.5	1.5	0.0	0.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	676	0	602				0	1028	458	0	1028	
V/C Ratio(X)	0.78	0.00	0.13				0.00	0.54	0.20	0.00	0.10	
Avail Cap(c_a), veh/h	2458	0	2187				0	3211	1432	0	3211	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	9.4	0.0	7.0				0.0	10.3	9.2	0.0	8.9	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.1				0.0	0.4	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.3				0.0	1.0	0.3	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	0.0	7.1				0.0	10.7	9.4	0.0	9.0	0.0
LnGrp LOS	B	A	A				A	B	A	A	A	
Approach Vol, veh/h		610						640			100	A
Approach Delay, s/veh		10.9						10.5			9.0	
Approach LOS		B						B			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		15.9		18.6		15.9						
Change Period (Y+Rc), s		5.9		5.5		5.9						
Max Green Setting (Gmax), s		31.1		47.5		31.1						
Max Q Clear Time (g_c+I1), s		6.5		11.0		2.7						
Green Ext Time (p_c), s		3.5		2.1		0.5						

Intersection Summary			
HCM 6th Ctrl Delay			10.6
HCM 6th LOS			B

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	30	50	40	20	10
Future Vol, veh/h	20	30	50	40	20	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	30	50	40	20	10

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	120	70	0	0	90	0
Stage 1	70	-	-	-	-	-
Stage 2	50	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	876	993	-	-	1505	-
Stage 1	953	-	-	-	-	-
Stage 2	972	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	865	993	-	-	1505	-
Mov Cap-2 Maneuver	865	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	959	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	4.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	938	1505	-
HCM Lane V/C Ratio	-	-	0.053	0.013	-
HCM Control Delay (s)	-	-	9.1	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	40	20	150	50	20	300
v/c Ratio	0.09	0.05	0.06	0.03	0.05	0.13
Control Delay	14.8	8.4	12.8	3.9	15.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	8.4	12.8	3.9	15.1	1.4
Queue Length 50th (ft)	4	0	0	0	2	0
Queue Length 95th (ft)	34	14	60	26	21	18
Internal Link Dist (ft)	4683			1755	1647	
Turn Bay Length (ft)		175	300			175
Base Capacity (vph)	1570	1319	2550	1740	1435	2303
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.06	0.03	0.01	0.13

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	40	20	150	50	20	300
Future Volume (veh/h)	40	20	150	50	20	300
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	40	20	150	50	20	300
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	129	108	434	744	324	857
Arrive On Green	0.07	0.07	0.13	0.40	0.18	0.18
Sat Flow, veh/h	1870	1571	3456	1870	1781	2790
Grp Volume(v), veh/h	40	20	150	50	20	300
Grp Sat Flow(s),veh/h/ln	1870	1571	1728	1870	1781	1395
Q Serve(g_s), s	0.6	0.3	1.1	0.4	0.3	2.3
Cycle Q Clear(g_c), s	0.6	0.3	1.1	0.4	0.3	2.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	129	108	434	744	324	857
V/C Ratio(X)	0.31	0.18	0.35	0.07	0.06	0.35
Avail Cap(c_a), veh/h	2078	1745	2104	3596	1742	3079
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	11.9	10.8	5.1	9.2	7.3
Incr Delay (d2), s/veh	1.4	0.8	0.5	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.2	0.0	0.1	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.4	12.7	11.3	5.1	9.3	7.5
LnGrp LOS	B	B	B	A	A	A
Approach Vol, veh/h	60			200	320	
Approach Delay, s/veh	13.1			9.7	7.6	
Approach LOS	B			A	A	

Timer - Assigned Phs	1	2	6	8
Phs Duration (G+Y+Rc), s	8.9	7.8	16.7	10.4
Change Period (Y+Rc), s	5.5	5.9	5.9	5.5
Max Green Setting (Gmax), s	16.5	30.1	52.1	26.5
Max Q Clear Time (g_c+I1), s	3.1	2.6	2.4	4.3
Green Ext Time (p_c), s	0.3	0.2	0.2	1.1

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	200	50	80	110	10	40	30	230	10	10	20
v/c Ratio	0.07	0.34	0.08	0.26	0.13	0.01	0.15	0.07	0.43	0.07	0.03	0.04
Control Delay	32.7	20.7	0.2	26.1	12.1	0.0	28.1	17.8	5.8	32.7	22.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	20.7	0.2	26.1	12.1	0.0	28.1	17.8	5.8	32.7	22.8	0.2
Queue Length 50th (ft)	2	39	0	16	10	0	8	6	0	2	2	0
Queue Length 95th (ft)	21	151	0	80	76	0	50	31	48	21	16	0
Internal Link Dist (ft)		1889			3503			1141			1439	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	146	1017	950	481	1309	1135	314	1249	1113	146	1106	1012
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.20	0.05	0.17	0.08	0.01	0.13	0.02	0.21	0.07	0.01	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	200	50	80	110	10	40	30	230	10	10	20
Future Volume (veh/h)	10	200	50	80	110	10	40	30	230	10	10	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	200	50	80	110	10	40	30	230	10	10	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	332	280	101	423	357	48	385	325	14	350	295
Arrive On Green	0.01	0.18	0.18	0.06	0.23	0.23	0.03	0.21	0.21	0.01	0.19	0.19
Sat Flow, veh/h	1781	1870	1576	1781	1870	1578	1781	1870	1577	1781	1870	1577
Grp Volume(v), veh/h	10	200	50	80	110	10	40	30	230	10	10	20
Grp Sat Flow(s),veh/h/ln	1781	1870	1576	1781	1870	1578	1781	1870	1577	1781	1870	1577
Q Serve(g_s), s	0.2	4.1	1.1	1.8	2.0	0.2	0.9	0.5	5.6	0.2	0.2	0.4
Cycle Q Clear(g_c), s	0.2	4.1	1.1	1.8	2.0	0.2	0.9	0.5	5.6	0.2	0.2	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	14	332	280	101	423	357	48	385	325	14	350	295
V/C Ratio(X)	0.71	0.60	0.18	0.79	0.26	0.03	0.84	0.08	0.71	0.71	0.03	0.07
Avail Cap(c_a), veh/h	151	1046	881	496	1408	1188	323	1318	1111	151	1137	958
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	15.6	14.4	19.2	13.1	12.4	20.0	13.2	15.2	20.4	13.7	13.8
Incr Delay (d2), s/veh	49.7	1.8	0.3	12.7	0.3	0.0	30.2	0.1	2.8	49.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.4	0.3	0.9	0.6	0.1	0.7	0.2	1.6	0.3	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.2	17.4	14.7	32.0	13.5	12.5	50.2	13.3	18.1	70.2	13.8	13.9
LnGrp LOS	E	B	B	C	B	B	D	B	B	E	B	B
Approach Vol, veh/h		260			200			300			40	
Approach Delay, s/veh		18.9			20.8			21.9			27.9	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	14.4	7.8	13.2	6.6	13.6	5.8	15.3
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	3.5	29.1	11.5	23.1	7.5	25.1	3.5	31.1
Max Q Clear Time (g_c+I1), s	2.2	7.6	3.8	6.1	2.9	2.4	2.2	4.0
Green Ext Time (p_c), s	0.0	0.8	0.1	0.9	0.0	0.1	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	500	10	280	240	10	1210
v/c Ratio	0.83	0.02	0.64	0.13	0.02	0.90
Control Delay	38.8	11.6	43.0	10.6	19.0	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	11.6	43.0	10.6	19.0	21.1
Queue Length 50th (ft)	237	0	74	32	3	153
Queue Length 95th (ft)	#404	11	#133	54	14	#287
Internal Link Dist (ft)	3503			1595	3285	
Turn Bay Length (ft)		150	375			
Base Capacity (vph)	772	652	462	2203	752	1550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.02	0.61	0.11	0.01	0.78

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	500	10	280	240	10	1210
Future Volume (veh/h)	500	10	280	240	10	1210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	500	10	280	240	10	1210
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	564	477	363	1683	691	1082
Arrive On Green	0.30	0.30	0.10	0.47	0.39	0.39
Sat Flow, veh/h	1870	1580	3456	3647	1781	2790
Grp Volume(v), veh/h	500	10	280	240	10	1210
Grp Sat Flow(s),veh/h/ln	1870	1580	1728	1777	1781	1395
Q Serve(g_s), s	21.0	0.4	6.5	3.1	0.3	31.9
Cycle Q Clear(g_c), s	21.0	0.4	6.5	3.1	0.3	31.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	564	477	363	1683	691	1082
V/C Ratio(X)	0.89	0.02	0.77	0.14	0.01	1.12
Avail Cap(c_a), veh/h	707	597	424	2018	691	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	20.2	35.8	12.2	15.5	25.2
Incr Delay (d2), s/veh	11.0	0.0	7.3	0.0	0.0	65.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.1	2.9	1.0	0.1	18.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.4	20.2	43.2	12.3	15.5	91.1
LnGrp LOS	D	C	D	B	B	F
Approach Vol, veh/h	510			520	1220	
Approach Delay, s/veh	38.1			28.9	90.4	
Approach LOS	D			C	F	

Timer - Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		37.4	14.1	30.7				44.8
Change Period (Y+Rc), s		5.5	5.5	5.9				5.9
Max Green Setting (Gmax), s		31.9	10.1	31.1				46.7
Max Q Clear Time (g_c+I1), s		33.9	8.5	23.0				5.1
Green Ext Time (p_c), s		0.0	0.2	1.7				1.4

Intersection Summary			
HCM 6th Ctrl Delay			64.3
HCM 6th LOS			E

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2505	20	40	575	10	90
v/c Ratio	0.93	0.02	0.71	0.20	0.06	0.48
Control Delay	22.5	5.0	120.3	3.5	51.9	35.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	5.0	120.3	3.5	51.9	35.7
Queue Length 50th (ft)	750	2	33	35	8	33
Queue Length 95th (ft)	#1556	14	#116	114	25	85
Internal Link Dist (ft)	1595			3525	10448	
Turn Bay Length (ft)		150	180			175
Base Capacity (vph)	2693	1174	56	2920	436	417
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.02	0.71	0.20	0.02	0.22

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2505	20	40	575	10	90
Future Volume (veh/h)	2505	20	40	575	10	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2505	20	40	575	10	90
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2703	1204	51	2966	128	114
Arrive On Green	0.76	0.76	0.03	0.83	0.07	0.07
Sat Flow, veh/h	3647	1583	1781	3647	1781	1585
Grp Volume(v), veh/h	2505	20	40	575	10	90
Grp Sat Flow(s),veh/h/ln	1777	1583	1781	1777	1781	1585
Q Serve(g_s), s	69.6	0.4	2.7	3.9	0.6	6.8
Cycle Q Clear(g_c), s	69.6	0.4	2.7	3.9	0.6	6.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2703	1204	51	2966	128	114
V/C Ratio(X)	0.93	0.02	0.78	0.19	0.08	0.79
Avail Cap(c_a), veh/h	2833	1262	60	3113	467	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.8	3.5	58.8	2.0	52.8	55.6
Incr Delay (d2), s/veh	5.8	0.0	42.2	0.0	0.3	11.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.6	0.1	1.8	0.6	0.3	3.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.7	3.5	100.9	2.0	53.0	67.1
LnGrp LOS	B	A	F	A	D	E
Approach Vol, veh/h	2525			615	100	
Approach Delay, s/veh	17.6			8.5	65.7	
Approach LOS	B			A	E	

Timer - Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		14.2	9.0	98.6				107.6
Change Period (Y+Rc), s		5.5	5.5	5.9				5.9
Max Green Setting (Gmax), s		31.9	4.1	97.1				106.7
Max Q Clear Time (g_c+I1), s		8.8	4.7	71.6				5.9
Green Ext Time (p_c), s		0.2	0.0	21.0				3.6

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1400	300	170	80	80	210
v/c Ratio	0.78	0.19	0.10	0.05	0.21	0.35
Control Delay	14.1	0.3	7.5	0.1	17.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	0.3	7.5	0.1	17.0	7.4
Queue Length 50th (ft)	96	0	7	0	14	0
Queue Length 95th (ft)	435	0	44	0	62	37
Internal Link Dist (ft)	764		1208			
Turn Bay Length (ft)		425		240		650
Base Capacity (vph)	3305	1550	3302	1550	1638	2402
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.19	0.05	0.05	0.05	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1400	300	0	170	80	0	0	0	80	0	210
Future Volume (vph)	0	1400	300	0	170	80	0	0	0	80	0	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.4	4.0		6.8	4.0				4.4		4.4
Lane Util. Factor		0.95	1.00		0.95	1.00				1.00		0.88
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3539	1550		3539	1550				1770		2787
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3539	1550		3539	1550				1770		2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1400	300	0	170	80	0	0	0	80	0	210
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	179
Lane Group Flow (vph)	0	1400	300	0	170	80	0	0	0	80	0	31
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Free				Prot		Prot
Protected Phases		6			2					8		4
Permitted Phases			Free			Free						
Actuated Green, G (s)		23.2	47.7		22.8	47.7				13.7		7.0
Effective Green, g (s)		23.2	47.7		22.8	47.7				13.7		7.0
Actuated g/C Ratio		0.49	1.00		0.48	1.00				0.29		0.15
Clearance Time (s)		6.4			6.8					4.4		4.4
Vehicle Extension (s)		1.0			1.0					1.0		1.0
Lane Grp Cap (vph)		1721	1550		1691	1550				508		408
v/s Ratio Prot		c0.40			0.05					0.05		0.01
v/s Ratio Perm			c0.19			0.05						
v/c Ratio		0.81	0.19		0.10	0.05				0.16		0.08
Uniform Delay, d1		10.4	0.0		6.8	0.0				12.7		17.6
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		2.9	0.3		0.0	0.1				0.1		0.0
Delay (s)		13.3	0.3		6.8	0.1				12.7		17.6
Level of Service		B	A		A	A				B		B
Approach Delay (s)		11.0			4.7			0.0			16.3	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	47.7	Sum of lost time (s)	15.6
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	510	960	290	240	85	85	590
v/c Ratio	0.57	0.62	0.35	0.44	0.34	0.34	0.37
Control Delay	18.0	1.9	16.5	6.0	24.8	24.7	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	1.9	16.5	6.0	24.8	24.7	3.0
Queue Length 50th (ft)	49	0	27	0	17	17	10
Queue Length 95th (ft)	142	0	84	48	81	80	46
Internal Link Dist (ft)	1208		511			1333	
Turn Bay Length (ft)		210		290	495		495
Base Capacity (vph)	3450	1550	3441	1499	1390	1401	2726
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.62	0.08	0.16	0.06	0.06	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	510	960	0	290	240	160	10	590	0	0	0
Future Volume (vph)	0	510	960	0	290	240	160	10	590	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.0		5.8	5.8	5.5	5.5	5.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		3539	1550		3539	1547	1681	1695	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		3539	1550		3539	1547	1681	1695	2787			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	510	960	0	290	240	160	10	590	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	182	0	0	205	0	0	0
Lane Group Flow (vph)	0	510	960	0	290	58	85	85	385	0	0	0
Confl. Peds. (#/hr)			2			2						
Turn Type		NA	Free		NA	Perm	Split	NA	custom			
Protected Phases		6			2		8	8	7 8			
Permitted Phases			Free			2						
Actuated Green, G (s)		11.4	43.4		10.5	10.5	6.6	6.6	21.6			
Effective Green, g (s)		11.4	43.4		10.5	10.5	6.6	6.6	21.6			
Actuated g/C Ratio		0.26	1.00		0.24	0.24	0.15	0.15	0.50			
Clearance Time (s)		4.9			5.8	5.8	5.5	5.5				
Vehicle Extension (s)		1.0			1.0	1.0	1.0	1.0				
Lane Grp Cap (vph)		929	1550		856	374	255	257	1387			
v/s Ratio Prot		0.14			0.08		0.05	0.05	0.14			
v/s Ratio Perm			c0.62			0.04						
v/c Ratio		0.55	0.62		0.34	0.16	0.33	0.33	0.28			
Uniform Delay, d1		13.8	0.0		13.6	13.0	16.4	16.4	6.4			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.4	1.9		0.1	0.1	0.3	0.3	0.1			
Delay (s)		14.1	1.9		13.7	13.0	16.7	16.7	6.5			
Level of Service		B	A		B	B	B	B	A			
Approach Delay (s)		6.1			13.4			8.8			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	43.4	Sum of lost time (s)	16.8
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	1140	310	160	860	40	130	310	580	30	100	70
v/c Ratio	0.53	0.94	0.43	0.87	0.59	0.06	0.62	0.53	0.93	0.51	0.25	0.15
Control Delay	62.4	47.2	5.6	84.9	26.2	0.1	59.0	30.3	44.7	77.5	30.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	47.2	5.6	84.9	26.2	0.1	59.0	30.3	44.7	77.5	30.0	0.7
Queue Length 50th (ft)	38	~394	5	103	244	0	84	158	249	19	48	0
Queue Length 95th (ft)	#91	#538	66	#230	314	0	#198	242	#466	#65	91	0
Internal Link Dist (ft)		745			1992			1063			3284	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	116	1212	725	183	1451	722	209	664	680	59	565	579
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.94	0.43	0.87	0.59	0.06	0.62	0.47	0.85	0.51	0.18	0.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	60	1140	310	160	860	40	130	310	580	30	100	70
Future Volume (veh/h)	60	1140	310	160	860	40	130	310	580	30	100	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	1140	0	160	860	0	130	310	580	30	100	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	1135		173	1326		144	622	526	37	509	431
Arrive On Green	0.04	0.32	0.00	0.10	0.37	0.00	0.08	0.33	0.33	0.02	0.27	0.27
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1582	1781	1870	1582
Grp Volume(v), veh/h	60	1140	0	160	860	0	130	310	580	30	100	70
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1582	1781	1870	1582
Q Serve(g_s), s	3.3	31.6	0.0	8.8	19.8	0.0	7.2	13.1	32.9	1.7	4.1	3.3
Cycle Q Clear(g_c), s	3.3	31.6	0.0	8.8	19.8	0.0	7.2	13.1	32.9	1.7	4.1	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	77	1135		173	1326		144	622	526	37	509	431
V/C Ratio(X)	0.78	1.00		0.93	0.65		0.90	0.50	1.10	0.81	0.20	0.16
Avail Cap(c_a), veh/h	110	1135		173	1326		144	622	526	56	529	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	33.7	0.0	44.3	25.7	0.0	45.1	26.4	33.0	48.3	27.7	27.4
Incr Delay (d2), s/veh	19.7	27.8	0.0	47.5	1.1	0.0	47.3	0.6	70.3	39.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	16.6	0.0	5.9	7.7	0.0	4.9	5.4	21.6	1.1	1.7	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	61.5	0.0	91.8	26.8	0.0	92.4	27.0	103.3	87.5	27.9	27.6
LnGrp LOS	E	F		F	C		F	C	F	F	C	C
Approach Vol, veh/h		1200	A		1020	A		1020			200	
Approach Delay, s/veh		61.8			37.0			78.8			36.7	
Approach LOS		E			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	38.8	15.1	37.5	13.5	32.9	9.8	42.8				
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9				
Max Green Setting (Gmax), s	3.1	32.9	9.6	31.6	8.0	28.0	6.1	35.1				
Max Q Clear Time (g_c+I1), s	3.7	34.9	10.8	33.6	9.2	6.1	5.3	21.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.6	0.0	4.3				
Intersection Summary												
HCM 6th Ctrl Delay			58.0									
HCM 6th LOS			E									

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	560	1040	27	227	1070	120	10	820	200	280	1167	180
v/c Ratio	0.99	0.61	0.04	0.58	0.73	0.21	0.10	0.66	0.38	0.91	0.62	0.26
Control Delay	82.0	32.4	0.1	53.9	38.4	2.9	60.9	39.7	6.7	84.0	30.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	32.4	0.1	53.9	38.4	2.9	60.9	39.7	6.7	84.0	30.1	4.9
Queue Length 50th (ft)	196	212	0	75	237	0	3	184	0	98	228	0
Queue Length 95th (ft)	#428	327	0	142	347	21	14	257	56	#240	356	49
Internal Link Dist (ft)		1627			1756			1585			1050	
Turn Bay Length (ft)	450		450	400		400	400		400	400		400
Base Capacity (vph)	566	2133	745	485	2013	712	96	2070	754	307	2382	826
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.49	0.04	0.47	0.53	0.17	0.10	0.40	0.27	0.91	0.49	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	560	1040	27	227	1070	120	10	820	200	280	1167	180
Future Volume (veh/h)	560	1040	27	227	1070	120	10	820	200	280	1167	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	560	1040	27	227	1070	120	10	820	200	280	1167	180
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	585	1872	580	300	1451	450	25	1194	370	318	1626	504
Arrive On Green	0.17	0.37	0.37	0.09	0.28	0.28	0.01	0.23	0.23	0.09	0.32	0.32
Sat Flow, veh/h	3456	5106	1582	3456	5106	1582	3456	5106	1581	3456	5106	1582
Grp Volume(v), veh/h	560	1040	27	227	1070	120	10	820	200	280	1167	180
Grp Sat Flow(s),veh/h/ln	1728	1702	1582	1728	1702	1582	1728	1702	1581	1728	1702	1582
Q Serve(g_s), s	16.6	16.7	1.1	6.6	19.6	6.1	0.3	15.1	11.5	8.3	20.9	9.0
Cycle Q Clear(g_c), s	16.6	16.7	1.1	6.6	19.6	6.1	0.3	15.1	11.5	8.3	20.9	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	585	1872	580	300	1451	450	25	1194	370	318	1626	504
V/C Ratio(X)	0.96	0.56	0.05	0.76	0.74	0.27	0.40	0.69	0.54	0.88	0.72	0.36
Avail Cap(c_a), veh/h	585	2199	681	502	2075	643	100	2134	661	318	2456	761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	26.0	21.1	46.1	33.5	28.6	51.1	36.1	34.7	46.4	31.1	27.1
Incr Delay (d2), s/veh	26.8	0.3	0.0	3.9	0.8	0.3	10.0	0.7	1.2	23.7	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	6.2	0.4	2.9	7.6	2.2	0.2	5.9	4.2	4.4	7.9	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	26.3	21.1	50.0	34.3	29.0	61.0	36.8	36.0	70.1	31.7	27.5
LnGrp LOS	E	C	C	D	C	C	E	D	D	E	C	C
Approach Vol, veh/h		1627			1417			1030			1627	
Approach Delay, s/veh		41.0			36.4			36.9			37.9	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	30.1	14.5	43.8	6.2	38.8	23.0	35.3
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	9.5	43.2	15.0	44.5	3.0	49.7	17.5	42.0
Max Q Clear Time (g_c+I1), s	10.3	17.1	8.6	18.7	2.3	22.9	18.6	21.6
Green Ext Time (p_c), s	0.0	5.9	0.4	7.0	0.0	8.8	0.0	7.0

Intersection Summary			
HCM 6th Ctrl Delay			38.2
HCM 6th LOS			D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	1710	20	30	1340	240	80	20	60	570	70	110
v/c Ratio	0.75	0.88	0.03	0.67	0.81	0.36	0.53	0.11	0.22	0.93	0.11	0.18
Control Delay	91.0	41.9	0.1	119.3	42.8	6.1	67.4	48.9	1.8	62.3	27.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.0	41.9	0.1	119.3	42.8	6.1	67.4	48.9	1.8	62.3	27.1	5.3
Queue Length 50th (ft)	67	435	0	23	330	0	58	14	0	403	37	0
Queue Length 95th (ft)	#198	#770	0	#96	#571	68	131	37	0	#856	70	36
Internal Link Dist (ft)		760			4518			633			10448	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	120	1947	677	45	1653	663	197	575	582	611	1010	897
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.88	0.03	0.67	0.81	0.36	0.41	0.03	0.10	0.93	0.07	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1710	20	30	1340	240	80	20	60	570	70	110
Future Volume (veh/h)	90	1710	20	30	1340	240	80	20	60	570	70	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	1710	20	30	1340	240	80	20	60	570	70	110
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	1900	588	37	1683	521	103	136	114	599	657	556
Arrive On Green	0.06	0.37	0.37	0.02	0.33	0.33	0.06	0.07	0.07	0.34	0.35	0.35
Sat Flow, veh/h	1781	5106	1581	1781	5106	1580	1781	1870	1572	1781	1870	1582
Grp Volume(v), veh/h	90	1710	20	30	1340	240	80	20	60	570	70	110
Grp Sat Flow(s),veh/h/ln	1781	1702	1581	1781	1702	1580	1781	1870	1572	1781	1870	1582
Q Serve(g_s), s	5.6	35.5	0.9	1.9	26.8	13.5	5.0	1.1	4.1	35.0	2.8	5.4
Cycle Q Clear(g_c), s	5.6	35.5	0.9	1.9	26.8	13.5	5.0	1.1	4.1	35.0	2.8	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	113	1900	588	37	1683	521	103	136	114	599	657	556
V/C Ratio(X)	0.79	0.90	0.03	0.80	0.80	0.46	0.78	0.15	0.53	0.95	0.11	0.20
Avail Cap(c_a), veh/h	127	1962	607	48	1734	537	208	603	507	643	1060	897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	33.2	22.4	54.7	34.2	29.7	52.2	48.8	50.2	36.3	24.5	25.4
Incr Delay (d2), s/veh	26.0	6.0	0.0	51.6	2.6	0.6	12.0	0.5	3.7	23.3	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	14.4	0.3	1.3	10.6	4.9	2.5	0.5	1.7	18.2	1.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.8	39.2	22.4	106.3	36.8	30.4	64.2	49.3	53.9	59.6	24.6	25.5
LnGrp LOS	E	D	C	F	D	C	E	D	D	E	C	C
Approach Vol, veh/h		1820			1610			160			750	
Approach Delay, s/veh		41.0			37.1			58.5			51.4	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	43.2	13.4	7.9	47.7	12.0	44.7	12.6	42.9
Change Period (Y+Rc), s	5.5	5.3	5.5	5.9	5.5	5.3	5.5	5.9
Max Green Setting (Gmax), s	40.5	36.2	3.0	43.1	13.1	63.6	8.0	38.1
Max Q Clear Time (g_c+I1), s	37.0	6.1	3.9	37.5	7.0	7.4	7.6	28.8
Green Ext Time (p_c), s	0.7	0.2	0.0	4.3	0.1	0.7	0.0	5.8

Intersection Summary	
HCM 6th Ctrl Delay	42.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	2350	1220	1310	360	270	600
v/c Ratio	0.96	0.93	0.53	0.40	0.39	0.95
Control Delay	34.0	17.5	17.3	4.9	21.5	52.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	17.5	17.3	4.9	21.5	52.6
Queue Length 50th (ft)	459	40	185	23	106	304
Queue Length 95th (ft)	#596	#568	227	74	171	#526
Internal Link Dist (ft)	4518		937			
Turn Bay Length (ft)		400		100		440
Base Capacity (vph)	2452	1309	2452	910	718	654
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.93	0.53	0.40	0.38	0.92

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2350	1220	0	1310	360	0	0	0	270	0	600
Future Volume (veh/h)	0	2350	1220	0	1310	360	0	0	0	270	0	600
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	2350	0	0	1310	0				270	0	600
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2437		0	2437					704	0	627
Arrive On Green	0.00	0.48	0.00	0.00	0.48	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	5274	1585	0	5274	1585				1781	0	1585
Grp Volume(v), veh/h	0	2350	0	0	1310	0				270	0	600
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585				1781	0	1585
Q Serve(g_s), s	0.0	39.8	0.0	0.0	16.1	0.0				9.7	0.0	32.9
Cycle Q Clear(g_c), s	0.0	39.8	0.0	0.0	16.1	0.0				9.7	0.0	32.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2437		0	2437					704	0	627
V/C Ratio(X)	0.00	0.96		0.00	0.54					0.38	0.00	0.96
Avail Cap(c_a), veh/h	0	2439		0	2439					715	0	637
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	22.6	0.0	0.0	16.4	0.0				19.3	0.0	26.3
Incr Delay (d2), s/veh	0.0	11.1	0.0	0.0	0.2	0.0				0.3	0.0	25.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	15.5	0.0	0.0	5.3	0.0				3.9	0.0	15.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	33.8	0.0	0.0	16.7	0.0				19.6	0.0	51.7
LnGrp LOS	A	C		A	B					B	A	D
Approach Vol, veh/h		2350	A		1310	A					870	
Approach Delay, s/veh		33.8			16.7						41.7	
Approach LOS		C			B						D	
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				48.6		40.8		48.6				
Change Period (Y+Rc), s				5.9		5.5		5.9				
Max Green Setting (Gmax), s				42.7		35.9		42.7				
Max Q Clear Time (g_c+I1), s				41.8		34.9		18.1				
Green Ext Time (p_c), s				0.8		0.4		9.0				
Intersection Summary												
HCM 6th Ctrl Delay			30.3									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1230	390	1210	250	650	900
v/c Ratio	0.61	0.25	0.61	0.16	0.79	0.58
Control Delay	18.6	0.4	18.9	0.2	23.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	0.4	18.9	0.2	23.9	1.6
Queue Length 50th (ft)	134	0	133	0	203	0
Queue Length 95th (ft)	267	0	264	0	438	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	3867	1550	3838	1583	1564	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.25	0.32	0.16	0.42	0.58

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1230	390	0	1210	250	650	0	900	0	0	0
Future Volume (veh/h)	0	1230	390	0	1210	250	650	0	900	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	1230	0	0	1210	0	650	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2101		0	2101		720	0				
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00	0.40	0.00	0.00			
Sat Flow, veh/h	0	5274	1585	0	5274	1585	1781	0	1585			
Grp Volume(v), veh/h	0	1230	0	0	1210	0	650	0	0			
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	9.1	0.0	0.0	8.9	0.0	16.7	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	9.1	0.0	0.0	8.9	0.0	16.7	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2101		0	2101		720	0				
V/C Ratio(X)	0.00	0.59		0.00	0.58		0.90	0.00				
Avail Cap(c_a), veh/h	0	5122		0	5069		2279	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	11.1	0.0	0.0	11.1	0.0	13.6	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.3	0.0	1.8	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.2	0.0	0.0	2.1	0.0	5.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.3	0.0	0.0	11.3	0.0	15.4	0.0	0.0			
LnGrp LOS	A	B		A	B		B	A				
Approach Vol, veh/h		1230	A		1210	A		650	A			
Approach Delay, s/veh		11.3			11.3			15.4				
Approach LOS		B			B			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		25.6				25.6		23.3				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		48.5				* 49		62.5				
Max Q Clear Time (g_c+I1), s		10.9				11.1		18.7				
Green Ext Time (p_c), s		9.2				7.4		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		12.2
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	50	0	2130	0	790	110	0	3000	780
Future Vol, veh/h	0	0	0	50	0	2130	0	790	110	0	3000	780
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	0	-	0	-	-	0	-	-	485
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	50	0	2130	0	790	110	0	3000	780

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	2290	-	-	-	0	-	-	-	0
Stage 1	790	-	-	-	-	-	-	-	-
Stage 2	1500	-	-	-	-	-	-	-	-
Critical Hdwy	6.63	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	~ 38	0	0	0	-	0	0	-	0
Stage 1	446	0	0	0	-	0	0	-	0
Stage 2	172	0	0	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	~ 38	0	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	~ 38	0	-	-	-	-	-	-	-
Stage 1	446	0	-	-	-	-	-	-	-
Stage 2	172	0	-	-	-	-	-	-	-

Approach	WB			NB			SB
HCM Control Delay, s	$ 418.1			0			0
HCM LOS	F						

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	38	-	-
HCM Lane V/C Ratio	-	1.316	-	-
HCM Control Delay (s)	-	$ 418.1	0	-
HCM Lane LOS	-	F	A	-
HCM 95th %tile Q(veh)	-	5.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	157.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	690	700	10	250	510	2570
Future Vol, veh/h	690	700	10	250	510	2570
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	30	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	690	700	10	250	510	2570

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	655	510	510	0	-	0
Stage 1	510	-	-	-	-	-
Stage 2	145	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 415	~ 562	1053	-	-	0
Stage 1	~ 602	-	-	-	-	0
Stage 2	868	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 410	~ 562	1053	-	-	-
Mov Cap-2 Maneuver	~ 410	-	-	-	-	-
Stage 1	~ 595	-	-	-	-	-
Stage 2	868	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	244.1	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1053	-	410	562	-
HCM Lane V/C Ratio	0.009	-	1.683	1.246	-
HCM Control Delay (s)	8.5	0	$ 341.4	148.2	-
HCM Lane LOS	A	A	F	F	-
HCM 95th %tile Q(veh)	0	-	41.3	27	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	90	50	30	60	40
Future Vol, veh/h	30	90	50	30	60	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	90	50	30	60	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	225	65	0	0	80	0
Stage 1	65	-	-	-	-	-
Stage 2	160	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	763	999	-	-	1518	-
Stage 1	958	-	-	-	-	-
Stage 2	869	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	732	999	-	-	1518	-
Mov Cap-2 Maneuver	732	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	834	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	9.5		0		4.5	
HCM LOS	A					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	916	1518	-
HCM Lane V/C Ratio	-	-	0.131	0.04	-
HCM Control Delay (s)	-	-	9.5	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	10	70	90	0	60
Future Vol, veh/h	50	10	70	90	0	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	10	70	90	0	60

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	175	115	0	0	160	0
Stage 1	115	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	815	937	-	-	1419	-
Stage 1	910	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	815	937	-	-	1419	-
Mov Cap-2 Maneuver	815	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	833	1419	-
HCM Lane V/C Ratio	-	-	0.072	-	-
HCM Control Delay (s)	-	-	9.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Intersection Delay, s/veh	17
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	220	200	50	340	140
Future Vol, veh/h	20	220	200	50	340	140
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	220	200	50	340	140
Number of Lanes	1	1	1	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	11.6	10.8	23
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	0%	71%
Vol Thru, %	100%	0%	0%	0%	29%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	200	50	20	220	480
LT Vol	0	0	20	0	340
Through Vol	200	0	0	0	140
RT Vol	0	50	0	220	0
Lane Flow Rate	200	50	20	220	480
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.326	0.072	0.039	0.353	0.743
Departure Headway (Hd)	5.859	5.149	6.999	5.781	5.569
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	614	696	512	623	653
Service Time	3.592	2.882	4.738	3.52	3.596
HCM Lane V/C Ratio	0.326	0.072	0.039	0.353	0.735
HCM Control Delay	11.4	8.3	10	11.7	23
HCM Lane LOS	B	A	A	B	C
HCM 95th-tile Q	1.4	0.2	0.1	1.6	6.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	160	210	30	60	90	200	840	90	390
v/c Ratio	0.55	0.32	0.37	0.27	0.18	0.22	0.62	0.51	0.37	0.34
Control Delay	48.2	21.7	5.5	41.5	23.8	1.2	39.8	22.0	34.3	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	21.7	5.5	41.5	23.8	1.2	39.8	22.0	34.3	20.9
Queue Length 50th (ft)	32	44	0	11	20	0	68	94	30	38
Queue Length 95th (ft)	#141	109	44	#50	50	1	#247	203	96	90
Internal Link Dist (ft)		3313			367			2142		3285
Turn Bay Length (ft)	175		175	175		175	400		400	
Base Capacity (vph)	165	1038	963	111	987	907	323	1925	308	1829
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.15	0.22	0.27	0.06	0.10	0.62	0.44	0.29	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	160	210	30	60	90	200	820	20	90	340	50
Future Volume (veh/h)	90	160	210	30	60	90	200	820	20	90	340	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	160	210	30	60	90	200	820	20	90	340	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	386	326	37	257	217	254	1354	33	116	841	121
Arrive On Green	0.09	0.21	0.21	0.02	0.14	0.14	0.14	0.26	0.26	0.07	0.19	0.19
Sat Flow, veh/h	1781	1870	1580	1781	1870	1578	1781	5127	125	1781	4508	646
Grp Volume(v), veh/h	90	160	210	30	60	90	200	544	296	90	254	136
Grp Sat Flow(s),veh/h/ln	1781	1870	1580	1781	1870	1578	1781	1702	1847	1781	1702	1750
Q Serve(g_s), s	2.4	3.6	5.9	0.8	1.4	2.6	5.3	6.8	6.9	2.4	3.2	3.3
Cycle Q Clear(g_c), s	2.4	3.6	5.9	0.8	1.4	2.6	5.3	6.8	6.9	2.4	3.2	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.37
Lane Grp Cap(c), veh/h	160	386	326	37	257	217	254	899	488	116	635	327
V/C Ratio(X)	0.56	0.41	0.64	0.82	0.23	0.42	0.79	0.61	0.61	0.78	0.40	0.41
Avail Cap(c_a), veh/h	193	1247	1054	135	1186	1001	390	1518	824	372	1483	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	16.8	17.8	23.9	18.8	19.3	20.2	15.8	15.8	22.5	17.5	17.5
Incr Delay (d2), s/veh	3.1	0.7	2.1	34.1	0.5	1.3	5.9	0.7	1.2	10.6	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.4	2.0	0.7	0.6	0.9	2.1	2.0	2.3	1.2	1.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	17.5	19.9	58.0	19.3	20.6	26.1	16.4	17.0	33.1	17.9	18.4
LnGrp LOS	C	B	B	E	B	C	C	B	B	C	B	B
Approach Vol, veh/h		460			180			1040			480	
Approach Delay, s/veh		20.0			26.4			18.4			20.9	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	18.8	6.5	14.9	12.5	15.0	9.9	11.5
Change Period (Y+Rc), s	5.5	5.9	5.5	4.8	5.5	5.9	5.5	4.8
Max Green Setting (Gmax), s	10.2	21.8	3.7	32.6	10.7	21.3	5.3	31.0
Max Q Clear Time (g_c+I1), s	4.4	8.9	2.8	7.9	7.3	5.3	4.4	4.6
Green Ext Time (p_c), s	0.1	3.8	0.0	1.6	0.2	1.8	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	20.0
HCM 6th LOS	B

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	80	20	10	1070	740
v/c Ratio	0.20	0.06	0.04	0.33	0.24
Control Delay	16.5	7.2	25.1	7.7	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	7.2	25.1	7.7	9.6
Queue Length 50th (ft)	20	0	3	45	28
Queue Length 95th (ft)	48	12	18	161	141
Internal Link Dist (ft)	2842			686	2142
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	1324	1174	261	4557	3573
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.02	0.04	0.23	0.21

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	20	10	1070	690	50
Future Volume (veh/h)	80	20	10	1070	690	50
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	20	10	1070	690	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	120	107	14	2724	1618	117
Arrive On Green	0.07	0.07	0.01	0.53	0.33	0.33
Sat Flow, veh/h	1781	1585	1781	5274	5028	350
Grp Volume(v), veh/h	80	20	10	1070	482	258
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1806
Q Serve(g_s), s	1.3	0.3	0.2	3.5	3.1	3.2
Cycle Q Clear(g_c), s	1.3	0.3	0.2	3.5	3.1	3.2
Prop In Lane	1.00	1.00	1.00			0.19
Lane Grp Cap(c), veh/h	120	107	14	2724	1133	601
V/C Ratio(X)	0.67	0.19	0.70	0.39	0.43	0.43
Avail Cap(c_a), veh/h	2152	1915	405	7885	3826	2030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	12.6	14.1	3.9	7.4	7.4
Incr Delay (d2), s/veh	6.2	0.8	47.2	0.1	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.2	0.0	0.4	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.2	13.4	61.4	4.0	7.7	7.9
LnGrp LOS	B	B	E	A	A	A
Approach Vol, veh/h	100			1080	740	
Approach Delay, s/veh	18.1			4.6	7.7	
Approach LOS	B			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		21.1		7.4	5.7	15.4
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		44.1		34.5	6.5	32.1
Max Q Clear Time (g_c+I1), s		5.5		3.3	2.2	5.2
Green Ext Time (p_c), s		7.8		0.3	0.0	4.3
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	190	640	350	860	1080
v/c Ratio	0.45	0.86	0.82	0.28	0.76
Control Delay	25.7	18.5	47.5	8.8	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	18.5	47.5	8.8	29.3
Queue Length 50th (ft)	73	57	145	56	149
Queue Length 95th (ft)	123	188	#387	135	#297
Internal Link Dist (ft)	1671			1050	4086
Turn Bay Length (ft)		175	400		
Base Capacity (vph)	875	1019	425	3131	1501
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.63	0.82	0.27	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	190	640	350	860	960	120
Future Volume (veh/h)	190	640	350	860	960	120
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	640	350	860	960	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	695	619	338	2465	1065	133
Arrive On Green	0.39	0.39	0.19	0.48	0.23	0.23
Sat Flow, veh/h	1781	1585	1781	5274	4764	573
Grp Volume(v), veh/h	190	640	350	860	710	370
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1764
Q Serve(g_s), s	6.5	35.0	17.0	9.4	18.2	18.3
Cycle Q Clear(g_c), s	6.5	35.0	17.0	9.4	18.2	18.3
Prop In Lane	1.00	1.00	1.00			0.32
Lane Grp Cap(c), veh/h	695	619	338	2465	789	409
V/C Ratio(X)	0.27	1.03	1.04	0.35	0.90	0.90
Avail Cap(c_a), veh/h	695	619	338	2482	801	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	27.3	36.3	14.4	33.4	33.5
Incr Delay (d2), s/veh	0.2	45.4	58.8	0.1	13.1	22.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	32.6	12.3	3.1	8.2	9.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.9	72.8	95.1	14.5	46.6	56.0
LnGrp LOS	B	F	F	B	D	E
Approach Vol, veh/h	830			1210	1080	
Approach Delay, s/veh	60.4			37.8	49.8	
Approach LOS	E			D	D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.2		40.5	22.5	26.7
Change Period (Y+Rc), s		5.9		5.5	5.5	5.9
Max Green Setting (Gmax), s		43.6		35.0	17.0	21.1
Max Q Clear Time (g_c+I1), s		11.4		37.0	19.0	20.3
Green Ext Time (p_c), s		5.7		0.0	0.0	0.5
Intersection Summary						
HCM 6th Ctrl Delay			48.0			
HCM 6th LOS			D			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	50	350	140	120	190	130	130	1100	210	370	1420
v/c Ratio	0.53	0.57	0.31	0.75	0.54	0.27	0.75	0.84	0.37	0.88	0.85
Control Delay	70.3	40.5	1.7	76.9	42.6	1.4	75.5	42.2	5.8	66.6	36.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	40.5	1.7	76.9	42.6	1.4	75.5	42.2	5.8	66.6	36.5
Queue Length 50th (ft)	31	109	0	39	114	0	42	235	0	119	292
Queue Length 95th (ft)	#101	152	0	#107	182	0	#113	#415	51	#257	#516
Internal Link Dist (ft)		450			475			2094			1585
Turn Bay Length (ft)	375		375	425		425	400		400	400	
Base Capacity (vph)	95	1192	673	161	614	663	173	1312	563	422	1679
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.29	0.21	0.75	0.31	0.20	0.75	0.84	0.37	0.88	0.85

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	350	140	120	190	130	130	1100	210	370	1400	20
Future Volume (vph)	50	350	140	120	190	130	130	1100	210	370	1400	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	0.97	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	3185	1406	3090	1676	1405	3090	4577	1405	3090	4566	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	3185	1406	3090	1676	1405	3090	4577	1405	3090	4566	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	350	140	120	190	130	130	1100	210	370	1400	20
RTOR Reduction (vph)	0	0	112	0	0	103	0	0	150	0	1	0
Lane Group Flow (vph)	50	350	28	120	190	27	130	1100	60	370	1419	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	4.8	20.9	20.9	5.3	21.4	21.4	5.7	29.3	29.3	14.0	37.6	
Effective Green, g (s)	4.8	20.9	20.9	5.3	21.4	21.4	5.7	29.3	29.3	14.0	37.6	
Actuated g/C Ratio	0.05	0.20	0.20	0.05	0.21	0.21	0.06	0.28	0.28	0.14	0.36	
Clearance Time (s)	5.5	4.8	4.8	5.5	4.8	4.8	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	74	645	284	158	347	291	170	1299	398	419	1663	
v/s Ratio Prot	0.03	0.11		c0.04	c0.11		0.04	0.24		c0.12	c0.31	
v/s Ratio Perm			0.02			0.02			0.04			
v/c Ratio	0.68	0.54	0.10	0.76	0.55	0.09	0.76	0.85	0.15	0.88	0.85	
Uniform Delay, d1	48.4	36.9	33.5	48.3	36.6	33.1	48.1	34.8	27.6	43.8	30.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.7	0.9	0.2	18.7	1.8	0.1	18.3	5.3	0.2	19.2	4.5	
Delay (s)	70.1	37.8	33.6	67.0	38.3	33.2	66.4	40.1	27.8	63.0	34.7	
Level of Service	E	D	C	E	D	C	E	D	C	E	C	
Approach Delay (s)		39.7			44.6			40.7			40.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	28.1
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	10	1180	490	130	1660	670
v/c Ratio	0.01	0.88	0.30	0.08	0.71	0.63
Control Delay	14.1	22.5	15.3	0.1	20.5	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	22.5	15.3	0.1	20.5	4.5
Queue Length 50th (ft)	3	209	78	0	237	0
Queue Length 95th (ft)	12	311	133	0	347	63
Internal Link Dist (ft)			551		2094	
Turn Bay Length (ft)						400
Base Capacity (vph)	930	1645	1749	1583	2513	1102
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.72	0.28	0.08	0.66	0.61

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	10	0	1180	0	490	130	0	1660	670
Future Volume (veh/h)	0	0	0	10	0	1180	0	490	130	0	1660	670
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				10	0	1180	0	490	0	0	1660	670
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				791	0	1239	0	1520		0	2184	677
Arrive On Green				0.44	0.00	0.44	0.00	0.43	0.00	0.00	0.43	0.43
Sat Flow, veh/h				1781	0	2790	0	3647	1585	0	5274	1581
Grp Volume(v), veh/h				10	0	1180	0	490	0	0	1660	670
Grp Sat Flow(s),veh/h/ln				1781	0	1395	0	1777	1585	0	1702	1581
Q Serve(g_s), s				0.3	0.0	36.3	0.0	8.2	0.0	0.0	24.5	37.5
Cycle Q Clear(g_c), s				0.3	0.0	36.3	0.0	8.2	0.0	0.0	24.5	37.5
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				791	0	1239	0	1520		0	2184	677
V/C Ratio(X)				0.01	0.00	0.95	0.00	0.32		0.00	0.76	0.99
Avail Cap(c_a), veh/h				810	0	1269	0	1520		0	2184	677
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.8	0.0	23.8	0.0	16.9	0.0	0.0	21.6	25.3
Incr Delay (d2), s/veh				0.0	0.0	15.1	0.0	0.1	0.0	0.0	1.6	32.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	0.0	13.5	0.0	2.9	0.0	0.0	8.6	17.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.8	0.0	39.0	0.0	17.0	0.0	0.0	23.2	57.4
LnGrp LOS				B	A	D	A	B		A	C	E
Approach Vol, veh/h					1190			490	A		2330	
Approach Delay, s/veh					38.8			17.0			33.0	
Approach LOS					D			B			C	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		44.0				44.0		45.1				
Change Period (Y+Rc), s		5.9				5.9		5.5				
Max Green Setting (Gmax), s		38.1				38.1		40.5				
Max Q Clear Time (g_c+I1), s		10.2				39.5		38.3				
Green Ext Time (p_c), s		2.9				0.0		1.3				

Intersection Summary			
HCM 6th Ctrl Delay			32.8
HCM 6th LOS			C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	370	190	300	210	190	1490
v/c Ratio	0.55	0.27	0.31	0.36	0.19	0.96
Control Delay	12.3	2.8	11.8	4.4	11.2	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	2.8	11.8	4.4	11.2	19.2
Queue Length 50th (ft)	45	0	21	0	13	0
Queue Length 95th (ft)	135	26	61	36	41	#179
Internal Link Dist (ft)			529		551	
Turn Bay Length (ft)						
Base Capacity (vph)	1725	1526	3124	1422	3124	1550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.12	0.10	0.15	0.06	0.96

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	370	0	190	0	0	0	0	300	210	0	190	1490
Future Volume (veh/h)	370	0	190	0	0	0	0	300	210	0	190	1490
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	370	0	190				0	300	210	0	190	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	561	0	499				0	956	426	0	956	
Arrive On Green	0.31	0.00	0.31				0.00	0.27	0.27	0.00	0.27	0.00
Sat Flow, veh/h	1781	0	1585				0	3647	1585	0	3647	1585
Grp Volume(v), veh/h	370	0	190				0	300	210	0	190	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	0	1777	1585
Q Serve(g_s), s	4.9	0.0	2.6				0.0	1.8	3.1	0.0	1.1	0.0
Cycle Q Clear(g_c), s	4.9	0.0	2.6				0.0	1.8	3.1	0.0	1.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	561	0	499				0	956	426	0	956	
V/C Ratio(X)	0.66	0.00	0.38				0.00	0.31	0.49	0.00	0.20	
Avail Cap(c_a), veh/h	3088	0	2748				0	4033	1799	0	4033	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	8.1	0.0	7.3				0.0	8.0	8.4	0.0	7.7	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.5				0.0	0.2	0.9	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.5				0.0	0.3	0.5	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.4	0.0	7.8				0.0	8.2	9.3	0.0	7.8	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	
Approach Vol, veh/h		560						510			190	A
Approach Delay, s/veh		8.9						8.7			7.8	
Approach LOS		A						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		13.3		14.1		13.3						
Change Period (Y+Rc), s		5.9		5.5		5.9						
Max Green Setting (Gmax), s		31.1		47.5		31.1						
Max Q Clear Time (g_c+I1), s		5.1		6.9		3.1						
Green Ext Time (p_c), s		2.3		1.8		1.0						

Intersection Summary			
HCM 6th Ctrl Delay			8.6
HCM 6th LOS			A

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix D

Cargo Facility Shift Change Scenario Analysis

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	14	14	1500	29	14	1500
v/c Ratio	0.07	0.08	0.54	0.02	0.07	0.57
Control Delay	39.0	19.6	11.9	3.1	39.1	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	19.6	11.9	3.1	39.1	1.2
Queue Length 50th (ft)	6	0	0	0	6	0
Queue Length 95th (ft)	21	12	277	12	21	0
Internal Link Dist (ft)	2187			3724	1647	
Turn Bay Length (ft)		175	300			175
Base Capacity (vph)	614	531	2780	1697	569	2612
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.54	0.02	0.02	0.57

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	10	750	20	10	750
Future Volume (veh/h)	10	10	750	20	10	750
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1841	1870	1870	1841
Adj Flow Rate, veh/h	14	14	1500	29	14	1500
Peak Hour Factor	0.70	0.70	0.50	0.70	0.70	0.50
Percent Heavy Veh, %	2	2	4	2	2	4
Cap, veh/h	48	41	1671	1086	513	2140
Arrive On Green	0.03	0.03	0.49	0.58	0.29	0.29
Sat Flow, veh/h	1870	1585	3401	1870	1781	2745
Grp Volume(v), veh/h	14	14	1500	29	14	1500
Grp Sat Flow(s),veh/h/ln	1870	1585	1700	1870	1781	1373
Q Serve(g_s), s	0.6	0.8	34.8	0.6	0.5	23.1
Cycle Q Clear(g_c), s	0.6	0.8	34.8	0.6	0.5	23.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	48	41	1671	1086	513	2140
V/C Ratio(X)	0.29	0.34	0.90	0.03	0.03	0.70
Avail Cap(c_a), veh/h	552	467	2057	1801	513	2140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	41.6	20.1	7.8	22.2	4.7
Incr Delay (d2), s/veh	3.3	4.9	4.9	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	12.2	0.2	0.2	3.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.8	46.4	25.0	7.8	22.2	5.7
LnGrp LOS	D	D	C	A	C	A
Approach Vol, veh/h	28			1529	1514	
Approach Delay, s/veh	45.6			24.7	5.8	
Approach LOS	D			C	A	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	48.2	8.1				56.3		30.5
Change Period (Y+Rc), s	5.5	5.9				5.9		5.5
Max Green Setting (Gmax), s	52.5	25.6				83.6		25.0
Max Q Clear Time (g_c+I1), s	36.8	2.8				2.6		25.1
Green Ext Time (p_c), s	5.8	0.1				0.1		0.0

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	538.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	10	710	40	40	710	10	40	10	10	10	10	10
Future Vol, veh/h	10	710	40	40	710	10	40	10	10	10	10	10
Peak Hour Factor	0.70	0.50	0.70	0.70	0.50	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	4	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	14	1420	57	57	1420	14	57	14	14	14	14	14
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	558.1	564	15	14.3
HCM LOS	F	F	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	67%	1%	5%	33%
Vol Thru, %	17%	93%	93%	33%
Vol Right, %	17%	5%	1%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	760	760	30
LT Vol	40	10	40	10
Through Vol	10	710	710	10
RT Vol	10	40	10	10
Lane Flow Rate	86	1491	1491	43
Geometry Grp	1	1	1	1
Degree of Util (X)	0.173	2.193	2.206	0.087
Departure Headway (Hd)	9.899	6.523	6.543	10.354
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	365	582	567	348
Service Time	7.899	4.523	4.543	8.354
HCM Lane V/C Ratio	0.236	2.562	2.63	0.124
HCM Control Delay	15	558.1	564	14.3
HCM Lane LOS	B	F	F	B
HCM 95th-tile Q	0.6	87.5	88.1	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	14	1420	57	57	1440	14	85	42
v/c Ratio	0.33	0.65	0.06	0.46	1.13	0.01	0.50	0.29
Control Delay	85.0	21.2	0.1	71.2	92.1	0.0	61.2	46.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.0	21.2	0.1	71.2	92.1	0.0	61.2	46.1
Queue Length 50th (ft)	11	383	0	42	~1241	0	57	20
Queue Length 95th (ft)	31	290	0	80	711	0	95	46
Internal Link Dist (ft)		3724			4351		531	1439
Turn Bay Length (ft)	400		400	400		400		
Base Capacity (vph)	43	2252	1059	149	1273	1115	315	309
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.63	0.05	0.38	1.13	0.01	0.27	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	710	40	40	720	10	40	10	10	10	10	10
Future Volume (veh/h)	10	710	40	40	720	10	40	10	10	10	10	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	1420	57	57	1440	14	57	14	14	14	14	14
Peak Hour Factor	0.70	0.50	0.70	0.70	0.50	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	17	2365	1055	74	1304	1105	74	18	18	18	18	18
Arrive On Green	0.01	0.67	0.67	0.04	0.70	0.70	0.06	0.06	0.06	0.03	0.03	0.03
Sat Flow, veh/h	1781	3554	1585	1781	1870	1585	1180	290	290	579	579	579
Grp Volume(v), veh/h	14	1420	57	57	1440	14	85	0	0	42	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1759	0	0	1737	0	0
Q Serve(g_s), s	0.9	25.9	1.5	3.7	81.1	0.3	5.5	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	0.9	25.9	1.5	3.7	81.1	0.3	5.5	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.67		0.16	0.33		0.33
Lane Grp Cap(c), veh/h	17	2365	1055	74	1304	1105	110	0	0	54	0	0
V/C Ratio(X)	0.84	0.60	0.05	0.77	1.10	0.01	0.77	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	46	2365	1055	159	1304	1105	328	0	0	314	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	57.5	10.8	6.8	55.2	17.6	5.4	53.7	0.0	0.0	55.9	0.0	0.0
Incr Delay (d2), s/veh	63.9	0.4	0.0	15.7	58.5	0.0	10.9	0.0	0.0	20.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	8.2	0.4	1.9	46.1	0.1	2.7	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.5	11.3	6.8	70.9	76.1	5.4	64.6	0.0	0.0	76.5	0.0	0.0
LnGrp LOS	F	B	A	E	F	A	E	A	A	E	A	A
Approach Vol, veh/h		1491			1511			85			42	
Approach Delay, s/veh		12.1			75.3			64.6			76.5	
Approach LOS		B			E			E			E	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		13.2	10.3	83.3		9.5	6.6	87.0				
Change Period (Y+Rc), s		5.9	5.5	5.9		5.9	5.5	5.9				
Max Green Setting (Gmax), s		21.7	10.4	73.7		21.0	3.0	81.1				
Max Q Clear Time (g_c+I1), s		7.5	5.7	27.9		4.8	2.9	83.1				
Green Ext Time (p_c), s		0.2	0.0	13.1		0.1	0.0	0.0				

Intersection Summary			
HCM 6th Ctrl Delay			44.9
HCM 6th LOS			D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	43	29	1500	43	14	1500
v/c Ratio	0.21	0.15	0.63	0.03	0.08	0.61
Control Delay	39.7	15.1	15.6	3.2	38.3	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	15.1	15.6	3.2	38.3	1.5
Queue Length 50th (ft)	22	0	142	0	7	1
Queue Length 95th (ft)	46	16	292	16	21	0
Internal Link Dist (ft)	2187			3724	1647	
Turn Bay Length (ft)		175	250			175
Base Capacity (vph)	543	482	2373	1714	510	2470
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.06	0.63	0.03	0.03	0.61

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	30	20	750	30	10	750
Future Volume (veh/h)	30	20	750	30	10	750
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1841	1870	1870	1841
Adj Flow Rate, veh/h	43	29	1500	43	14	1500
Peak Hour Factor	0.70	0.70	0.50	0.70	0.70	0.50
Percent Heavy Veh, %	2	2	4	2	2	4
Cap, veh/h	81	69	1626	1122	472	2041
Arrive On Green	0.04	0.04	0.48	0.60	0.27	0.27
Sat Flow, veh/h	1870	1585	3401	1870	1781	2745
Grp Volume(v), veh/h	43	29	1500	43	14	1500
Grp Sat Flow(s),veh/h/ln	1870	1585	1700	1870	1781	1373
Q Serve(g_s), s	2.1	1.7	38.8	0.9	0.5	25.0
Cycle Q Clear(g_c), s	2.1	1.7	38.8	0.9	0.5	25.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	81	69	1626	1122	472	2041
V/C Ratio(X)	0.53	0.42	0.92	0.04	0.03	0.74
Avail Cap(c_a), veh/h	502	425	1789	1633	472	2041
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	43.9	23.0	7.7	25.7	6.8
Incr Delay (d2), s/veh	5.2	4.0	8.0	0.0	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.7	14.8	0.3	0.2	5.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	49.4	48.0	31.0	7.7	25.7	8.3
LnGrp LOS	D	D	C	A	C	A
Approach Vol, veh/h	72			1543	1514	
Approach Delay, s/veh	48.8			30.3	8.4	
Approach LOS	D			C	A	

Timer - Assigned Phs	1	2	6	8
Phs Duration (G+Y+Rc), s	52.5	10.0	62.5	31.8
Change Period (Y+Rc), s	7.4	5.9	5.9	6.8
Max Green Setting (Gmax), s	49.6	25.3	82.3	25.0
Max Q Clear Time (g_c+I1), s	40.8	4.1	2.9	27.0
Green Ext Time (p_c), s	4.2	0.2	0.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Notes
User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	608.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	730	40	10	740	10	30	20	70	10	10	10
Future Vol, veh/h	10	730	40	10	740	10	30	20	70	10	10	10
Peak Hour Factor	0.70	0.50	0.70	0.70	0.50	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	1460	57	14	1480	14	43	29	100	14	14	14
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	655.9	644.4	17.6	16.2
HCM LOS	F	F	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	1%	1%	33%
Vol Thru, %	17%	94%	97%	33%
Vol Right, %	58%	5%	1%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	780	760	30
LT Vol	30	10	10	10
Through Vol	20	730	740	10
RT Vol	70	40	10	10
Lane Flow Rate	171	1531	1509	43
Geometry Grp	1	1	1	1
Degree of Util (X)	0.331	2.408	2.382	0.092
Departure Headway (Hd)	9.819	7.207	7.258	12.005
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	369	521	513	300
Service Time	7.819	5.207	5.258	10.005
HCM Lane V/C Ratio	0.463	2.939	2.942	0.143
HCM Control Delay	17.6	655.9	644.4	16.2
HCM Lane LOS	C	F	F	C
HCM 95th-tile Q	1.4	92.8	90.6	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	14	1460	57	14	1480	14	172	42
v/c Ratio	0.32	0.64	0.05	0.28	1.23	0.01	0.72	0.29
Control Delay	82.6	18.4	0.1	77.9	134.8	0.0	57.1	44.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.6	18.4	0.1	77.9	134.8	0.0	57.1	44.8
Queue Length 50th (ft)	10	301	0	10	~1323	0	92	20
Queue Length 95th (ft)	31	282	0	31	782	0	140	45
Internal Link Dist (ft)		3724			4351		531	1439
Turn Bay Length (ft)	400		400	400		400		
Base Capacity (vph)	44	2281	1063	50	1203	1065	342	318
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.64	0.05	0.28	1.23	0.01	0.50	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	730	40	10	740	10	30	20	70	10	10	10
Future Volume (veh/h)	10	730	40	10	740	10	30	20	70	10	10	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	1460	57	14	1480	14	43	29	100	14	14	14
Peak Hour Factor	0.70	0.50	0.70	0.70	0.50	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	17	2226	993	17	1172	993	51	34	118	18	18	18
Arrive On Green	0.01	0.63	0.63	0.01	0.63	0.63	0.12	0.12	0.12	0.03	0.03	0.03
Sat Flow, veh/h	1781	3554	1585	1781	1870	1585	419	282	973	579	579	579
Grp Volume(v), veh/h	14	1460	57	14	1480	14	172	0	0	42	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1674	0	0	1737	0	0
Q Serve(g_s), s	0.9	30.8	1.6	0.9	74.1	0.4	11.9	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	0.9	30.8	1.6	0.9	74.1	0.4	11.9	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.25		0.58	0.33		0.33
Lane Grp Cap(c), veh/h	17	2226	993	17	1172	993	202	0	0	54	0	0
V/C Ratio(X)	0.84	0.66	0.06	0.84	1.26	0.01	0.85	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	45	2226	993	51	1172	993	309	0	0	308	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.5	14.0	8.6	58.5	22.1	8.3	50.9	0.0	0.0	56.9	0.0	0.0
Incr Delay (d2), s/veh	64.7	0.7	0.0	64.7	125.4	0.0	12.9	0.0	0.0	20.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	10.5	0.5	0.7	66.8	0.1	5.5	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	123.2	14.7	8.6	123.2	147.5	8.3	63.9	0.0	0.0	77.4	0.0	0.0
LnGrp LOS	F	B	A	F	F	A	E	A	A	E	A	A
Approach Vol, veh/h		1531			1508			172			42	
Approach Delay, s/veh		15.5			146.0			63.9			77.4	
Approach LOS		B			F			E			E	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		20.2	8.5	80.0		9.6	8.5	80.0				
Change Period (Y+Rc), s		5.9	7.4	5.9		5.9	7.4	5.9				
Max Green Setting (Gmax), s		21.8	3.4	73.7		21.0	3.0	74.1				
Max Q Clear Time (g_c+I1), s		13.9	2.9	32.8		4.8	2.9	76.1				
Green Ext Time (p_c), s		0.4	0.0	13.3		0.1	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			79.4									
HCM 6th LOS			E									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	43	29	1500	57	29	1500
v/c Ratio	0.20	0.14	0.63	0.04	0.15	0.61
Control Delay	39.8	15.1	15.5	3.4	39.4	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	15.1	15.5	3.4	39.4	1.5
Queue Length 50th (ft)	23	0	241	5	16	2
Queue Length 95th (ft)	45	16	275	20	35	0
Internal Link Dist (ft)	2187			1755	1647	
Turn Bay Length (ft)		175	300			175
Base Capacity (vph)	586	511	2343	1718	544	2457
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.06	0.64	0.03	0.05	0.61

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	30	20	750	40	20	750
Future Volume (veh/h)	30	20	750	40	20	750
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	29	1500	57	29	1500
Peak Hour Factor	0.70	0.70	0.50	0.70	0.70	0.50
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	95	79	1667	1112	496	2123
Arrive On Green	0.05	0.05	0.48	0.59	0.28	0.28
Sat Flow, veh/h	1870	1554	3456	1870	1781	2790
Grp Volume(v), veh/h	43	29	1500	57	29	1500
Grp Sat Flow(s),veh/h/ln	1870	1554	1728	1870	1781	1395
Q Serve(g_s), s	2.0	1.6	35.6	1.1	1.1	25.0
Cycle Q Clear(g_c), s	2.0	1.6	35.6	1.1	1.1	25.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	95	79	1667	1112	496	2123
V/C Ratio(X)	0.45	0.37	0.90	0.05	0.06	0.71
Avail Cap(c_a), veh/h	533	443	2021	1742	496	2123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	41.2	21.2	7.6	23.8	5.5
Incr Delay (d2), s/veh	3.3	2.8	5.2	0.0	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.7	13.0	0.4	0.4	4.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.7	44.0	26.4	7.6	23.8	6.6
LnGrp LOS	D	D	C	A	C	A
Approach Vol, veh/h	72			1557	1529	
Approach Delay, s/veh	44.5			25.7	7.0	
Approach LOS	D			C	A	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	48.8	10.5				59.3		30.5
Change Period (Y+Rc), s	5.5	5.9				5.9		5.5
Max Green Setting (Gmax), s	52.5	25.6				83.6		25.0
Max Q Clear Time (g_c+I1), s	37.6	4.0				3.1		27.0
Green Ext Time (p_c), s	5.7	0.2				0.3		0.0

Intersection Summary		
HCM 6th Ctrl Delay		17.1
HCM 6th LOS		B

Notes
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	14	1320	157	329	1460	14	57	43	43	14	29	29
v/c Ratio	0.35	0.72	0.18	0.87	1.04	0.01	0.88	0.22	0.08	0.30	0.22	0.12
Control Delay	90.1	29.0	3.7	73.2	53.8	0.0	142.8	57.9	3.1	84.7	62.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.1	29.0	3.7	73.2	53.8	0.0	142.8	57.9	3.1	84.7	62.1	1.0
Queue Length 50th (ft)	12	446	0	258	~1271	0	48	32	0	12	23	0
Queue Length 95th (ft)	31	289	13	313	531	0	#114	59	3	31	44	0
Internal Link Dist (ft)		1889			4351			531			1439	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	40	1873	889	453	1404	1186	65	324	613	46	308	373
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.70	0.18	0.73	1.04	0.01	0.88	0.13	0.07	0.30	0.09	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	660	110	230	730	10	40	30	30	10	20	20
Future Volume (veh/h)	10	660	110	230	730	10	40	30	30	10	20	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	1320	157	329	1460	14	57	43	43	14	29	29
Peak Hour Factor	0.70	0.50	0.70	0.70	0.50	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	16	1955	870	357	1386	1173	61	127	424	16	81	67
Arrive On Green	0.01	0.55	0.55	0.20	0.74	0.74	0.03	0.07	0.07	0.01	0.04	0.04
Sat Flow, veh/h	1781	3554	1582	1781	1870	1583	1781	1870	1562	1781	1870	1548
Grp Volume(v), veh/h	14	1320	157	329	1460	14	57	43	43	14	29	29
Grp Sat Flow(s),veh/h/ln	1781	1777	1582	1781	1870	1583	1781	1870	1562	1781	1870	1548
Q Serve(g_s), s	1.0	35.2	6.6	24.0	98.1	0.3	4.2	2.9	2.7	1.0	2.0	2.4
Cycle Q Clear(g_c), s	1.0	35.2	6.6	24.0	98.1	0.3	4.2	2.9	2.7	1.0	2.0	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	16	1955	870	357	1386	1173	61	127	424	16	81	67
V/C Ratio(X)	0.85	0.68	0.18	0.92	1.05	0.01	0.94	0.34	0.10	0.85	0.36	0.43
Avail Cap(c_a), veh/h	40	1955	870	450	1386	1173	61	321	586	46	305	253
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.5	21.3	14.9	51.9	17.1	4.5	63.8	58.8	36.4	65.5	61.5	61.7
Incr Delay (d2), s/veh	67.3	0.9	0.1	21.3	39.5	0.0	94.4	1.6	0.1	67.3	2.7	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	13.4	2.2	12.4	44.8	0.1	3.4	1.4	1.0	0.8	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	132.8	22.3	15.0	73.2	56.6	4.5	158.2	60.4	36.5	132.8	64.2	66.1
LnGrp LOS	F	C	B	E	F	A	F	E	D	F	E	E
Approach Vol, veh/h		1491			1803			143			72	
Approach Delay, s/veh		22.5			59.2			92.2			78.3	
Approach LOS		C			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	14.9	32.0	78.7	10.0	11.6	6.7	104.0
Change Period (Y+Rc), s	5.5	5.9	5.5	5.9	5.5	5.9	5.5	5.9
Max Green Setting (Gmax), s	3.4	22.7	33.4	67.7	4.5	21.6	3.0	98.1
Max Q Clear Time (g_c+I1), s	3.0	4.9	26.0	37.2	6.2	4.4	3.0	100.1
Green Ext Time (p_c), s	0.0	0.2	0.6	11.0	0.0	0.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	45.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	43	14	1500	29	14	1500
v/c Ratio	0.21	0.08	0.59	0.02	0.08	0.60
Control Delay	39.4	18.7	14.6	3.4	38.6	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	18.7	14.6	3.4	38.6	1.6
Queue Length 50th (ft)	22	0	142	0	7	2
Queue Length 95th (ft)	46	13	292	13	21	0
Internal Link Dist (ft)	2187			1755	1647	
Turn Bay Length (ft)		175	250			175
Base Capacity (vph)	560	479	2537	1716	526	2483
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.59	0.02	0.03	0.60

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	30	10	750	20	10	750
Future Volume (veh/h)	30	10	750	20	10	750
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1841	1870	1870	1841
Adj Flow Rate, veh/h	43	14	1500	29	14	1500
Peak Hour Factor	0.70	0.70	0.50	0.70	0.70	0.50
Percent Heavy Veh, %	2	2	4	2	2	4
Cap, veh/h	87	72	1624	1126	470	2036
Arrive On Green	0.05	0.05	0.48	0.60	0.26	0.26
Sat Flow, veh/h	1870	1551	3401	1870	1781	2745
Grp Volume(v), veh/h	43	14	1500	29	14	1500
Grp Sat Flow(s),veh/h/ln	1870	1551	1700	1870	1781	1373
Q Serve(g_s), s	2.1	0.8	39.1	0.6	0.6	25.0
Cycle Q Clear(g_c), s	2.1	0.8	39.1	0.6	0.6	25.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	87	72	1624	1126	470	2036
V/C Ratio(X)	0.50	0.19	0.92	0.03	0.03	0.74
Avail Cap(c_a), veh/h	500	414	1781	1625	470	2036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	43.5	23.1	7.6	25.9	7.0
Incr Delay (d2), s/veh	4.3	1.3	8.2	0.0	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.3	14.9	0.2	0.2	5.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.4	44.8	31.3	7.6	25.9	8.4
LnGrp LOS	D	D	C	A	C	A
Approach Vol, veh/h	57			1529	1514	
Approach Delay, s/veh	47.5			30.8	8.6	
Approach LOS	D			C	A	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	52.6	10.3				62.9		31.8
Change Period (Y+Rc), s	7.4	5.9				5.9		6.8
Max Green Setting (Gmax), s	49.6	25.3				82.3		25.0
Max Q Clear Time (g_c+I1), s	41.1	4.1				2.6		27.0
Green Ext Time (p_c), s	4.2	0.2				0.1		0.0

Intersection Summary			
HCM 6th Ctrl Delay			20.3
HCM 6th LOS			C

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	14	1440	71	114	1420	14	57	43	329	14	14	29
v/c Ratio	0.33	0.62	0.07	1.07	1.02	0.01	0.85	0.24	1.13	0.33	0.11	0.13
Control Delay	87.2	15.2	0.1	162.1	47.5	0.0	134.9	57.7	126.6	87.2	59.0	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.2	15.2	0.1	162.1	47.5	0.0	134.9	57.7	126.6	87.2	59.0	1.1
Queue Length 50th (ft)	11	348	0	~99	~1040	0	46	30	188	11	11	0
Queue Length 95th (ft)	31	228	0	#191	549	0	#112	58	239	31	27	0
Internal Link Dist (ft)		1889			4351			531			1439	
Turn Bay Length (ft)	400		400	400		400	175		175	175		175
Base Capacity (vph)	42	2521	1135	107	1396	1187	67	353	292	42	329	378
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.57	0.06	1.07	1.02	0.01	0.85	0.12	1.13	0.33	0.04	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	720	50	80	710	10	40	30	230	10	10	20
Future Volume (veh/h)	10	720	50	80	710	10	40	30	230	10	10	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	1440	71	114	1420	14	57	43	329	14	14	29
Peak Hour Factor	0.70	0.50	0.70	0.70	0.50	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	17	2118	943	92	1194	1011	56	302	337	17	261	220
Arrive On Green	0.01	0.60	0.60	0.05	0.64	0.64	0.03	0.16	0.16	0.01	0.14	0.14
Sat Flow, veh/h	1781	3554	1582	1781	1870	1583	1781	1870	1575	1781	1870	1574
Grp Volume(v), veh/h	14	1440	71	114	1420	14	57	43	329	14	14	29
Grp Sat Flow(s),veh/h/ln	1781	1777	1582	1781	1870	1583	1781	1870	1575	1781	1870	1574
Q Serve(g_s), s	1.2	40.4	2.8	7.6	93.7	0.5	4.6	2.9	23.7	1.2	1.0	2.4
Cycle Q Clear(g_c), s	1.2	40.4	2.8	7.6	93.7	0.5	4.6	2.9	23.7	1.2	1.0	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	17	2118	943	92	1194	1011	56	302	337	17	261	220
V/C Ratio(X)	0.84	0.68	0.08	1.24	1.19	0.01	1.02	0.14	0.98	0.84	0.05	0.13
Avail Cap(c_a), veh/h	36	2158	961	92	1194	1011	56	302	337	36	282	237
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.6	20.1	12.5	69.6	26.5	9.7	71.1	52.8	57.4	72.6	54.7	55.3
Incr Delay (d2), s/veh	65.0	0.9	0.0	169.9	93.7	0.0	126.4	0.2	42.9	65.0	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	15.3	0.9	7.7	66.5	0.2	4.0	1.3	15.7	0.8	0.4	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	137.5	21.0	12.6	239.5	120.2	9.7	197.5	53.0	100.3	137.5	54.8	55.6
LnGrp LOS	F	C	B	F	F	A	F	D	F	F	D	E
Approach Vol, veh/h		1525			1548			429			57	
Approach Delay, s/veh		21.7			128.0			108.5			75.5	
Approach LOS		C			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	29.6	15.0	93.4	12.0	26.4	8.8	99.6
Change Period (Y+Rc), s	7.4	5.9	7.4	5.9	7.4	5.9	7.4	5.9
Max Green Setting (Gmax), s	3.0	23.7	7.6	89.1	4.6	22.1	3.0	93.7
Max Q Clear Time (g_c+I1), s	3.2	25.7	9.6	42.4	6.6	4.4	3.2	95.7
Green Ext Time (p_c), s	0.0	0.0	0.0	13.5	0.0	0.1	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			79.2
HCM 6th LOS			E

Appendix E

Freeway Analysis Worksheets

Segment Inputs					Existing Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	2	0.83	2,439	2,750	1431.59	72.64	75	72.938	19.627	C	1614.13	72.64	75	70.8249	22.79	C
	North of SR-99 Northbound Off-Ramp	7700	2	1.83	1,788	3,336	1049.48	70.04	70	69.7372	15.049	B	1958.087	70.04	70	63.3335	30.917	D
	North of SR-99 Southbound On-Ramp	2100	2	1.83	1,436	2,398	842.87	70.04	70	68.5205	12.301	B	1407.522	70.04	70	69.5004	20.252	C
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	0.50	2,301	1,963	1350.59	73.6	75	73.6394	18.341	C	1152.196	73.6	75	74.7436	15.415	B
	North of SR-99 Southbound Diagonal On-Ramp	8600	2	1.50	3,294	2,753	1933.43	70.87	70	63.7601	30.324	D	1615.891	70.87	70	67.9936	23.765	C
	North of SR-99 Northbound Off-Ramp	0	2	1.50	2,421	2,404	1421.02	70.87	70	69.4333	20.466	C	1411.043	70.87	70	69.4833	20.308	C

Univeral Inputs:

PHF 0.92

(P_T) 16%

f_{HV} 0.925925926

Segment Inputs					Existing Conditions: AM Flow Inputs			AM LOS Performance Measures													PM Flow Inputs			PM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	2	1	1238	2709	1788	921	3180	2099	1081	60	1	2099	4800	0	1574	2099	0.663	22.02	C	3336	1944	1392	3916	2282	1634	65	1	2282	4800	0	1712	2282	0.816	27.51	C
NB	Airport Blvd Diagonal On-Ramp	2	1	210	2301	2093	208	2701	2457	244	70	1	2457	4800	0	1843	2457	0.563	25.12	C	1963	1630	333	2304	1913	391	55	1	1913	4800	0	1435	1913	0.48	21.95	C
	Airport Blvd Loop On-Ramp	2	1	235	2093	2020	73	2457	2371	86	68	1	2371	4800	0	1778	2371	0.512	23.13	C	1630	1570	60	1913	1843	70	53	1	1843	4800	0	1382	1843	0.399	18.89	B

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Existing Conditions

Segment Inputs

		Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)
SB	Airport Blvd Off-Ramp	2	1	-	315
NB	Airport Blvd Off-Ramp	2	1		1770

AM Flow Inputs

		Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Airport Blvd Off-Ramp	2439	2709	270	-	3180	317	1	3180	4800	0	2385	3180	0.663	28.77	D
NB	Airport Blvd Off-Ramp	2020	3294	1274	-	3867	1496	1	3867	4800	0	2900	3867	0.806	21.58	C

PM Flow Inputs / PM LOS Performance Measures

		Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Airport Blvd Off-Ramp	1944	2750	806	-	3228	946.2	1	3228	4800	0	2421	3228	0.673	29.18	D
NB	Airport Blvd Off-Ramp	1570	2753	1183	-	3232	1389	1	3232	4800	0	2424	3232	0.673	16.12	B

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Segment Inputs					Existing Plus Cargo Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	2	0.83	2,418	2,750	1419.26	72.64	75	73.0541	19.428	C	1614.13	72.64	75	70.8249	22.79	C
	North of SR-99 Northbound Off-Ramp	7700	2	1.83	1,788	3,320	1049.48	70.04	70	69.7372	15.049	B	1948.696	70.04	70	63.4977	30.689	D
	North of SR-99 Southbound On-Ramp	2100	2	1.83	1,436	2,382	842.87	70.04	70	68.5205	12.301	B	1398.13	70.04	70	69.5446	20.104	C
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	0.50	2,314	1,983	1358.22	73.6	75	73.5795	18.459	C	1163.935	73.6	75	74.7025	15.581	B
	North of SR-99 Southbound Diagonal On-Ramp	8600	2	1.50	3,294	2,753	1933.43	70.87	70	63.7601	30.324	D	1615.891	70.87	70	67.9936	23.765	C
	North of SR-99 Northbound Off-Ramp	0	2	1.50	2,421	2,404	1421.02	70.87	70	69.4333	20.466	C	1411.043	70.87	70	69.4833	20.308	C

Univeral Inputs:

PHF	0.92
(P_T)	16%
f_{HV}	0.925925926

Existing Plus Cargo Conditions

Segment Inputs		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	AM Flow Inputs: Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	AM LOS Performance Measures: v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	2	1	1238	2718	1788	930	3191	2099	1092	60	1	2099	4800	0	1574	2099	0.665	22.1	C
NB	Airport Blvd Diagonal On-Ramp	2	1	210	2314	2104	210	2716	2470	247	71	1	2470	4800	0	1852	2470	0.566	25.23	C
NB	Airport Blvd Loop On-Ramp	2	1	235	2104	2004	100	2470	2353	117	67	1	2353	4800	0	1764	2353	0.515	23.21	C

Segment Inputs		PM Flow Inputs: Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	PM LOS Performance Measures: v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	3320	1920	1400	3897	2254	1643	64	1	2254	4800	0	1690	2254	0.812	27.36	C
NB	Airport Blvd Diagonal On-Ramp	1983	1643	340	2328	1929	399	55	1	1929	4800	0	1447	1929	0.485	22.13	C
NB	Airport Blvd Loop On-Ramp	1643	1563	80	1929	1835	94	52	1	1835	4800	0	1376	1835	0.402	19	B

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Existing Plus Cargo Conditions

Segment Inputs						AM Flow Inputs														
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	2	1	-	315	2418	2718	300	-	3191	352.2	1	3191	4800	0	2393	3191	0.665	28.86	D
NB	Airport Blvd Off-Ramp	2	1		1770	2004	3294	1290	-	3867	1514	1	3867	4800	0	2900	3867	0.806	21.58	C

		PM Flow Inputs			PM LOS Performance Measures											
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	1920	2750	830	-	3228	974.3	1	3228	4800	0	2421	3228	0.673	29.18	D
NB	Airport Blvd Off-Ramp	1563	2753	1190	-	3232	1397	1	3232	4800	0	2424	3232	0.673	16.12	B

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Segment Inputs					Existing Plus MPU Conditions														
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures						
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	2	0.83	3,049	2,750	1789.63	72.64	75	68.0977	26.28	D	1614.13	72.64	75	70.8249	22.79	C
	North of SR-99 Northbound Off-Ramp	7700	2	1.83	1,788	4,476	1049.48	70.04	70	69.7372	15.049	B	2627.217	70.04	70	46.3714	56.656	F
	North of SR-99 Southbound On-Ramp	2100	2	1.83	1,436	3,538	842.87	70.04	70	68.5205	12.301	B	2076.652	70.04	70	61.0852	33.996	D
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	0.50	821	1,303	481.891	73.6	75	72.0284	6.6903	A	764.8043	73.6	75	74.3876	10.281	A
	North of SR-99 Southbound Diagonal On-Ramp	8600	2	1.50	3,294	2,753	1933.43	70.87	70	63.7601	30.324	D	1615.891	70.87	70	67.9936	23.765	C
	North of SR-99 Northbound Off-Ramp	0	2	1.50	2,421	2,404	1421.02	70.87	70	69.4333	20.466	C	1411.043	70.87	70	69.4833	20.308	C

Univeral Inputs:

PHF 0.92

(P_T) 16%

f_{HV} 0.925925926

Existing Plus MPU Conditions

		Segment Inputs			AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	2	1	1238	3729	1788	1941	4378	2099	2279	60	1	2099	4800	0	1574	2099	0.912	30.81	D
NB	Airport Blvd Diagonal On-Ramp	2	1	210	821	313	508	964	367	596	10	1	367.4	4800	0	276	367	0.201	11.4	B
	Airport Blvd Loop On-Ramp	2	1	235	313	240	73	367	282	86	8	1	281.7	4800	0	211	282	0.077	6.828	A

		PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	4476	1604	2872	5254	1883	3371	54	1	1883	4800	0	1412	1883	1.095	37.15	F
NB	Airport Blvd Diagonal On-Ramp	1303	570	733	1530	669	860	19	1	669.1	4800	0	502	669	0.319	15.69	B
	Airport Blvd Loop On-Ramp	570	510	60	669	599	70	17	1	598.7	4800	0	449	599	0.139	9.188	A

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Existing Plus MPU Conditions

	Segment Inputs					AM Flow Inputs															
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	2	1	-	315	3049	3729	680	-	4378	798.3	1	4378	4800	0	3283	4378	0.912	39.06	E
NB	Airport Blvd Off-Ramp	2	1		1770	240	3294	3054	-	3867	3585	1	3867	4800	0	2900	3867	0.806	21.58	C

		PM Flow Inputs			PM LOS Performance Measures											
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	1604	2750	1146	-	3228	1345	1	3228	4800	0	2421	3228	0.673	29.18	D
NB	Airport Blvd Off-Ramp	510	2753	2243	-	3232	2633	1	3232	4800	0	2424	3232	0.673	16.12	B

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Segment Inputs					Existing Plus Cargo and MPU Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	2	0.83	3,018	2,750	1771.43	72.64	75	68.4121	25.894	C	1614.13	72.64	75	70.8249	22.79	C
Southbound	North of SR-99 Northbound Off-Ramp	7700	2	1.83	1,788	4,440	1049.48	70.04	70	69.7372	15.049	B	2606.087	70.04	70	47.0659	55.371	F
Southbound	North of SR-99 Southbound On-Ramp	2100	2	1.83	1,436	3,502	842.87	70.04	70	68.5205	12.301	B	2055.522	70.04	70	61.5098	33.418	D
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	0.50	824	1,333	483.652	73.6	75	72.0486	6.7129	A	782.413	73.6	75	74.4759	10.506	A
Northbound	North of SR-99 Southbound Diagonal On-Ramp	8600	2	1.50	3,294	2,753	1933.43	70.87	70	63.7601	30.324	D	1615.891	70.87	70	67.9936	23.765	C
Northbound	North of SR-99 Northbound Off-Ramp	0	2	1.50	2,421	2,404	1421.02	70.87	70	69.4333	20.466	C	1411.043	70.87	70	69.4833	20.308	C

Univeral Inputs:

PHF	0.92
(P_T)	16%
f_{HV}	0.925925926

Existing Plus Cargo and MPU Conditions

	Segment Inputs				AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	2	1	1238	3728	1788	1940	4376	2099	2277	60	1	2099	4800	0	1574	2099	0.912	30.8	D
NB	Airport Blvd Diagonal On-Ramp	2	1	210	824	314	510	967	369	599	11	1	368.6	4800	0	276	369	0.202	11.43	B
	Airport Blvd Loop On-Ramp	2	1	235	314	214	100	369	251	117	7	1	251.2	4800	0	188	251	0.077	6.823	A

	Segment Inputs	PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capac ity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	4440	1580	2860	5212	1855	3357	53	1	1855	4800	0	1391	1855	1.086	36.82	F
NB	Airport Blvd Diagonal On-Ramp	1333	583	750	1565	684	880	20	1	684.4	4800	0	513	684	0.326	15.96	B
	Airport Blvd Loop On-Ramp	583	503	80	684	590	94	17	1	590.5	4800	0	443	590	0.143	9.297	A

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Existing Plus Cargo and MPU Conditions

Segment Inputs		Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)	AM Flow Inputs: Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Airport Blvd Off-Ramp	2	1	-	315	3018	3728	710	-	4376	833.5	1	4376	4800	0	3282	4376	0.912	39.05	E
NB	Airport Blvd Off-Ramp	2	1		1770	214	3294	3080	-	3867	3616	1	3867	4800	0	2900	3867	0.806	21.58	C

		PM Flow Inputs: Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	PM LOS Performance Measures: v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Airport Blvd Off-Ramp	1580	2750	1170	-	3228	1373	1	3228	4800	0	2421	3228	0.673	29.18	D
NB	Airport Blvd Off-Ramp	503	2753	2250	-	3232	2641	1	3232	4800	0	2424	3232	0.673	16.12	B

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

	Segment Inputs				Cumulative Conditions														
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures						
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	2	1.50	2,592	3,543	1521.3	70.87	70	68.8025	22.111	C	2079.391	70.87	70	61.0294	34.072	D
	North of Metro Parkway Off-Ramp	3300	2	2.00	2,082	3,133	1221.95	69.64	70	69.9944	17.458	B	1838.739	69.64	70	65.2673	28.172	D
	North of SR-99 Northbound Off-Ramp	Analyzed as a weaving segment																
	North of SR-99 Southbound On-Ramp	2100	2	2.17	2,367	3,355	1389.35	69.24	70	69.5841	19.966	C	1969.043	69.24	70	63.1394	31.186	D
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	1.33	2,619	2,772	1537.52	71.3	70	68.6785	22.387	C	1626.779	71.3	70	67.8872	23.963	C
	North of Metro Parkway Diagonal On-Ramp	1700	2	2.00	3,449	3,542	2024.7	69.64	70	62.1106	32.598	D	2078.736	69.64	70	61.0427	34.054	D
	North of SR-99 Southbound On-Ramp	2400	2	2.33	3,489	3,042	2048.18	68.84	70	61.655	33.22	D	1785.258	68.84	70	66.0267	27.038	D
	North of SR-99 Northbound Off-Ramp	0	2	2.33	2,616	2,693	1535.76	68.84	70	68.6923	22.357	C	1580.41	68.84	70	68.3213	23.132	C

Univeral Inputs:

PHF	0.92
(P_T)	16%
f_{HV}	0.925925926

	Segment Inputs				Cumulative Conditions: AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	2	1	1238	3942	3012	930	4627	3536	1092	101	1	3536	4800	0	2652	3536	0.964	33.3	D
SB	Metro Pkwy Loop On-Ramp	2	1	900	2722	1532	1190	3195	1798	1397	51	1	1798	4800	0	1349	1798	0.666	24.11	C
SB	Metro Pkwy Diagonal On-Ramp	2	1	1200	2812	2722	90	3301	3195	106	91	1	3195	4800	0	2396	3195	0.688	23.65	C
NB	Airport Blvd Diagonal On-Ramp	2	1	210	2619	2359	260	3075	2770	305	79	1	2770	4800	0	2077	2770	0.641	28	C
NB	Airport Blvd Loop On-Ramp	2	1	235	2359	2169	190	2770	2547	223	73	1	2547	4800	0	1910	2547	0.577	25.5	C
NB	Metro Pkwy Diagonal On-Ramp	2	1	800	3449	2259	1190	4049	2652	1397	76	1	2652	4800	0	1989	2652	0.844	31.4	D
NB	Metro Pkwy Loop On-Ramp	2	1	600	2259	2169	90	2652	2547	106	73	1	2547	4800	0	1910	2547	0.553	22.35	C

		Cumulative Conditions: PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	5933	4533	1400	6964	5321	1643	152	1	5321	4800	0	3991	5321	1.451	51.28	F
SB	Metro Pkwy Loop On-Ramp	4083	2613	1470	4793	3067	1726	88	1	3067	4800	0	2300	3067	0.998	36.42	E
SB	Metro Pkwy Diagonal On-Ramp	4293	4083	210	5039	4793	247	137	1	4793	4800	0	3595	4793	1.05	37.14	F
NB	Airport Blvd Diagonal On-Ramp	2772	2362	410	3254	2772	481	79	1	2772	4800	0	2079	2772	0.678	29.31	D
NB	Airport Blvd Loop On-Ramp	2362	2262	100	2772	2655	117	76	1	2655	4800	0	1991	2655	0.578	25.57	C
NB	Metro Pkwy Diagonal On-Ramp	3542	2072	1470	4157	2432	1726	69	1	2432	4800	0	1824	2432	0.866	32.09	D
NB	Metro Pkwy Loop On-Ramp	2072	1862	210	2432	2185	247	62	1	2185	4800	0	1639	2185	0.507	20.57	C

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Cumulative Conditions

		Segment Inputs				AM Flow Inputs														
		Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)	Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Airport Blvd Off-Ramp	2	1		315	2172	2592	420	-	3043	493	1	3043	4800	0	2282	3043	0.634	27.58	C
SB	Metro Pkwy Off-Ramp	2	1		500	1532	2082	550	-	2444	645.7	1	2444	4800	0	1833	2444	0.509	20.77	C
NB	Airport Blvd Off-Ramp	2	1		1770	2169	3449	1280	-	4049	1503	1	4049	4800	0	3037	4049	0.844	23.15	C
NB	Metro Pkwy Off-Ramp	2	2		200	2169	3489	1320	-	4096	1550	1	4096	4800	0	3072	4096	0.853	37.68	E

		PM Flow Inputs			PM LOS Performance Measures											
		Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Airport Blvd Off-Ramp	2553	3543	990	-	4159	1162	1	4159	4800	0	3119	4159	0.866	37.18	E
SB	Metro Pkwy Off-Ramp	2613	3133	520	-	3677	610.4	1	3677	4800	0	2758	3677	0.766	31.38	D
NB	Airport Blvd Off-Ramp	2262	3542	1280	-	4157	1503	1	4157	4800	0	3118	4157	0.866	24.08	C
NB	Metro Pkwy Off-Ramp	1862	3042	1180	-	3571	1385	1	3571	4800	0	2678	3571	0.744	33.16	D

Univeral Inputs:

Leng 1500 (ft)

S_{FF} 70 (mi/h)

S_{FR} 35 (mi/h)

PHF 0.92

(P_T) 16%

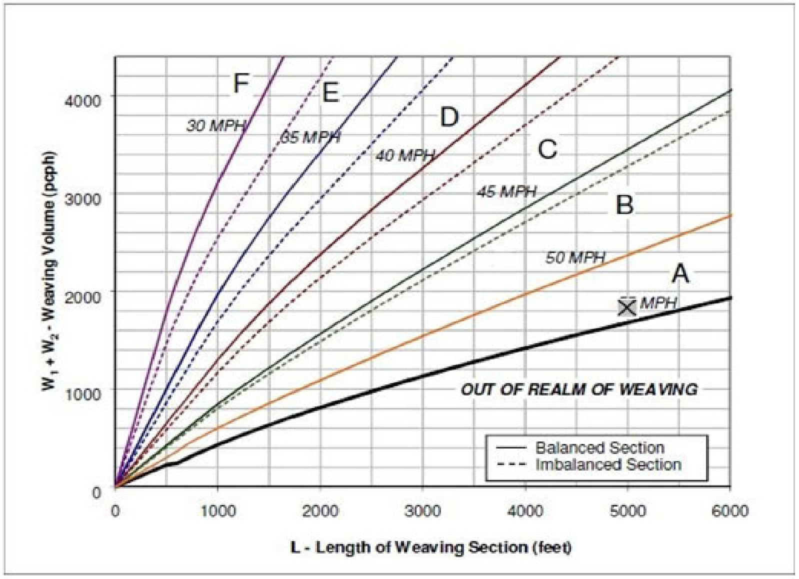
f_{HV} 0.925925926

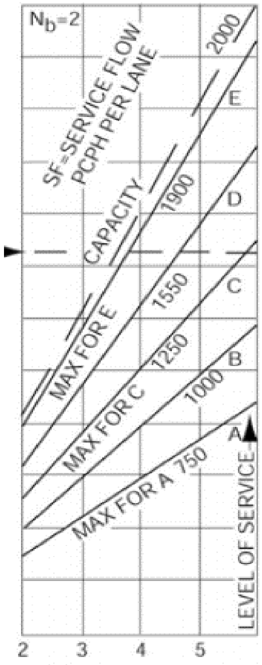
I-5 Southbound, North of SR-99 Northbound Off-Ramp Cumulative (AM)

Number of Entering Mainline Lanes	Nb	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	5025

Total Weaving Section (V)		On ramp to Mainline (W1)		Mainline to Off ramp (W2)	
Volume (vph)	2,692	Volume (vph)	1,280	Volume (vph)	445
Truck Percentage	16%	Truck Percentage	16%	Truck Percentage	16%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,907	Volume (pcph)	1,382	Volume (pcph)	481

W1 + W2	1,863
In between	
Speed 1	50
Speed 2	55
Interpolated Weaving Speed (Sw, mph)	54.0
Weaving Intensity Factor (k)	1.00
Service Volume ((SV, pcph)	
SV = (1/N)*[V+(k-1)*min(W1,W2)]	969
Level of Service (LOS)	B



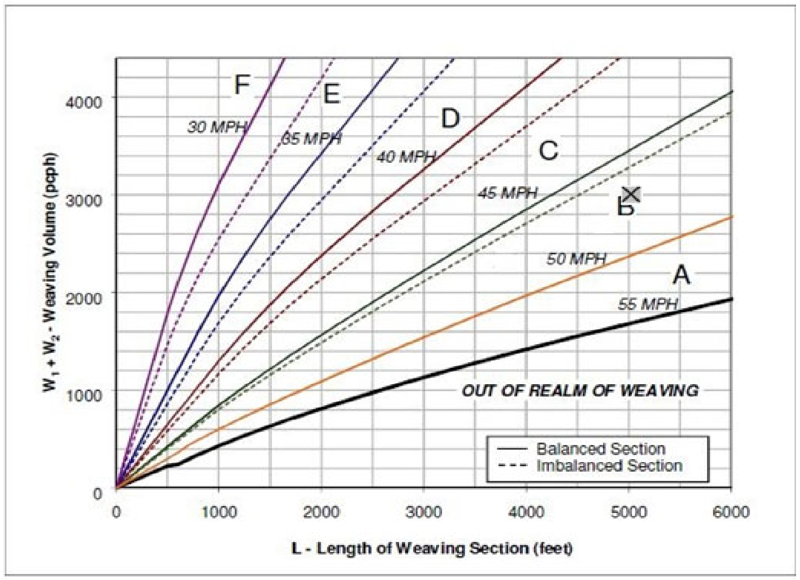


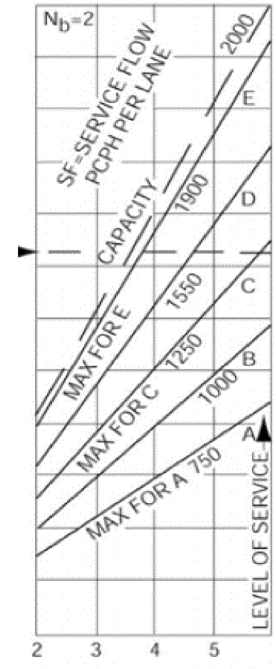
I-5 Southbound, North of SR-99 Northbound Off-Ramp Cumulative (PM)

Number of Entering Mainline Lanes	Nb	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	5025

Total Weaving Section (V)		On ramp to Mainline (W1)		Mainline to Off ramp (W2)	
Volume (vph)	4,293	Volume (vph)	1,680	Volume (vph)	938
Truck Percentage	16%	Truck Percentage	16%	Truck Percentage	16%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,636	Volume (pcph)	1,814	Volume (pcph)	1,013

W1 + W2	2,827
In between	
Speed 1	45
Speed 2	50
Interpolated Weaving Speed (Sw, mph)	46.0
Weaving Intensity Factor (k)	1.60
Service Volume ((SV, pcph)	
SV = (1/N)*[V+(k-1)*min(W1,W2)]	1,748
Level of Service (LOS)	E





	Segment Inputs				Cumulative Plus Cargo Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	2	1.50	2,572	3,533	1509.56	70.87	70	68.8884	21.913	C	2073.522	70.87	70	61.1487	33.909	D
	North of Metro Parkway Off-Ramp	3300	2	2.00	2,082	3,133	1221.95	69.64	70	69.9944	17.458	B	1838.739	69.64	70	65.2673	28.172	D
	North of SR-99 Northbound Off-Ramp	Analyzed as a weaving segment																
	North of SR-99 Southbound On-Ramp	2100	2	2.17	2,467	3,365	1448.04	69.24	70	69.2863	20.899	C	1974.913	69.24	70	63.0343	31.331	D
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	1.33	2,729	2,792	1602.09	71.3	70	68.1246	23.517	C	1638.518	71.3	70	67.7693	24.178	C
	North of Metro Parkway Diagonal On-Ramp	1700	2	2.00	3,559	3,552	2089.26	69.64	70	60.8269	34.348	D	2084.605	69.64	70	60.9227	34.217	D
	North of SR-99 Southbound On-Ramp	2400	2	2.33	3,489	3,042	2048.18	68.84	70	61.655	33.22	D	1785.258	68.84	70	66.0267	27.038	D
	North of SR-99 Northbound Off-Ramp	0	2	2.33	2,616	2,693	1535.76	68.84	70	68.6923	22.357	C	1580.41	68.84	70	68.3213	23.132	C

Univeral Inputs:

PHF	0.92
(P_T)	16%
f_{HV}	0.925925926

Cumulative Plus Cargo Conditions

Segment Inputs					AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	2	1	1238	3942	3012	930	4627	3536	1092	101	1	3536	4800	0	2652	3536	0.964	33.3	D
SB	Metro Pkwy Loop On-Ramp	2	1	900	2822	1522	1300	3313	1787	1526	51	1	1787	4800	0	1340	1787	0.69	24.97	C
SB	Metro Pkwy Diagonal On-Ramp	2	1	1200	2912	2822	90	3418	3313	106	95	1	3313	4800	0	2484	3313	0.712	24.56	C
NB	Airport Blvd Diagonal On-Ramp	2	1	210	2729	2469	260	3204	2899	305	83	1	2899	4800	0	2174	2899	0.668	29.01	D
NB	Airport Blvd Loop On-Ramp	2	1	235	2469	2279	190	2899	2676	223	76	1	2676	4800	0	2007	2676	0.604	26.51	C
NB	Metro Pkwy Diagonal On-Ramp	2	1	800	3559	2259	1300	4179	2652	1526	76	1	2652	4800	0	1989	2652	0.871	32.35	D
NB	Metro Pkwy Loop On-Ramp	2	1	600	2259	2169	90	2652	2547	106	73	1	2547	4800	0	1910	2547	0.553	22.35	C

		PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	5933	4533	1400	6964	5321	1643	152	1	5321	4800	0	3991	5321	1.451	51.28	F
SB	Metro Pkwy Loop On-Ramp	4093	2613	1480	4804	3067	1737	88	1	3067	4800	0	2300	3067	1.001	36.51	F
SB	Metro Pkwy Diagonal On-Ramp	4303	4093	210	5051	4804	247	137	1	4804	4800	0	3603	4804	1.052	37.24	F
NB	Airport Blvd Diagonal On-Ramp	2792	2382	410	3277	2796	481	80	1	2796	4800	0	2097	2796	0.683	29.5	D
NB	Airport Blvd Loop On-Ramp	2382	2272	110	2796	2667	129	76	1	2667	4800	0	2000	2667	0.582	25.75	C
NB	Metro Pkwy Diagonal On-Ramp	3552	2072	1480	4169	2432	1737	69	1	2432	4800	0	1824	2432	0.869	32.18	D
NB	Metro Pkwy Loop On-Ramp	2072	1862	210	2432	2185	247	62	1	2185	4800	0	1639	2185	0.507	20.57	C

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Cumulative Plus Cargo Conditions

		Segment Inputs				AM Flow Inputs														
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	2	1		315	2132	2572	440	-	3019	516.5	1	3019	4800	0	2264	3019	0.629	27.38	C
SB	Metro Pkwy Off-Ramp	2	1		500	1522	2082	560	-	2444	657.4	1	2444	4800	0	1833	2444	0.509	20.77	C
NB	Airport Blvd Off-Ramp	2	1		1770	2279	3559	1280	-	4179	1503	1	4179	4800	0	3134	4179	0.871	24.26	C
NB	Metro Pkwy Off-Ramp	2	2		200	2169	3489	1320	-	4096	1550	1	4096	4800	0	3072	4096	0.853	37.68	E

		PM Flow Inputs			PM LOS Performance Measures											
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	2533	3533	1000	-	4147	1174	1	4147	4800	0	3110	4147	0.864	37.08	E
SB	Metro Pkwy Off-Ramp	2613	3133	520	-	3677	610.4	1	3677	4800	0	2758	3677	0.766	31.38	D
NB	Airport Blvd Off-Ramp	2272	3552	1280	-	4169	1503	1	4169	4800	0	3127	4169	0.869	24.18	C
NB	Metro Pkwy Off-Ramp	1862	3042	1180	-	3571	1385	1	3571	4800	0	2678	3571	0.744	33.16	D

Univeral Inputs:

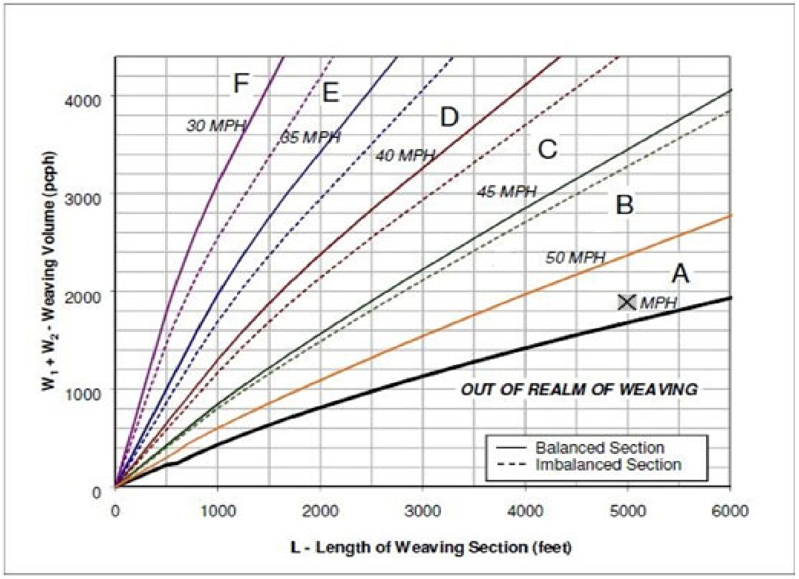
Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

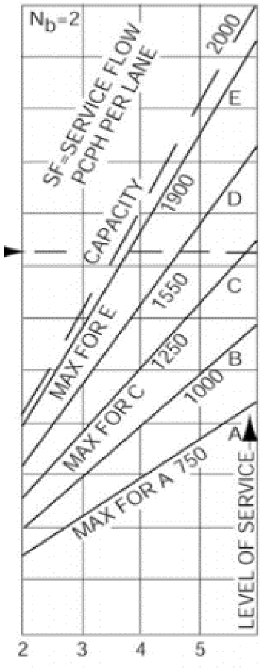
I-5 Southbound, North of SR-99 Northbound Off-Ramp Cumulative Plus Cargo (AM)

Number of Entering Mainline Lanes	Nb	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	5025

Total Weaving Section (V)		On ramp to Mainline (W1)		Mainline to Off ramp (W2)	
Volume (vph)	2,692	Volume (vph)	1,390	Volume (vph)	445
Truck Percentage	16%	Truck Percentage	16%	Truck Percentage	16%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,907	Volume (pcph)	1,501	Volume (pcph)	481

W1 + W2	1,982
In between	
Speed 1	50
Speed 2	55
Interpolated Weaving Speed (Sw, mph)	54.0
Weaving Intensity Factor (k)	1.00
Service Volume ((SV, pcph)	
SV = (1/N)*[V+(k-1)*min(W1,W2)]	969
Level of Service (LOS)	B



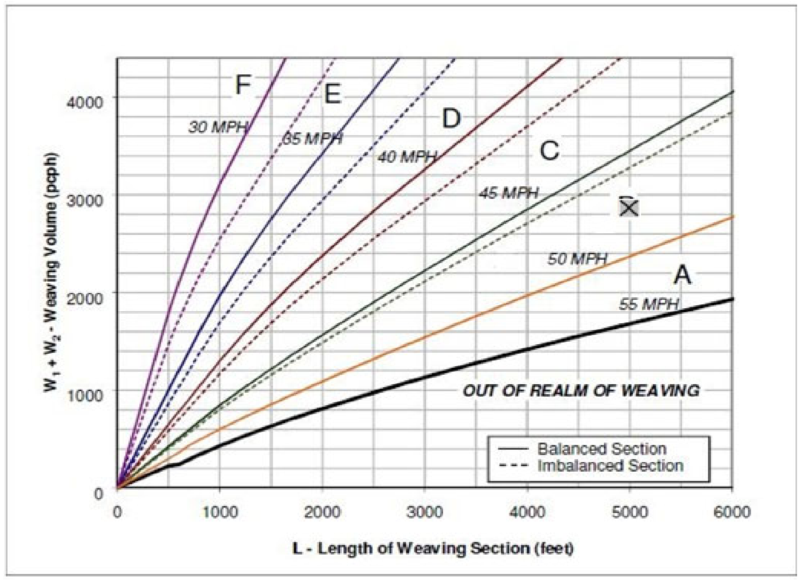


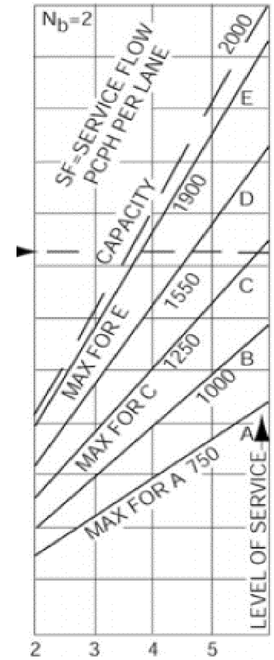
I-5 Southbound, North of SR-99 Northbound Off-Ramp Cumulative Plus Cargo (PM)

Number of Entering Mainline Lanes	Nb	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	5025

Total Weaving Section (V)		On ramp to Mainline (W1)		Mainline to Off ramp (W2)	
Volume (vph)	4,303	Volume (vph)	1,690	Volume (vph)	938
Truck Percentage	16%	Truck Percentage	16%	Truck Percentage	16%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,647	Volume (pcph)	1,825	Volume (pcph)	1,013

W1 + W2	2,838
In between	
Speed 1	45
Speed 2	50
Interpolated Weaving Speed (Sw, mph)	46.0
Weaving Intensity Factor (k)	1.60
Service Volume ((SV, pcph)	
SV = (1/N)*[V+(k-1)*min(W1,W2)]	1,752
Level of Service (LOS)	E
OUT OF REALM	





	Segment Inputs				Flow Inputs		Cumulative Plus MPU Conditions AM LOS Performance Measures						PM LOS Performance Measures					
		Length (ft)	Number of Lanes (N)	Interchange Density (I/mi)	AM Peak (veh/h)	PM Peak (veh/h)	V_p (pc/h/ln)	FFS (mi/h)		S (mi/h)	D (pc/mi/ln)	LOS	V_p (pc/h/ln)	FFS (mi/h)		S (mi/h)	D (pc/mi/ln)	LOS
Southbound	North of Airport Blvd Off-Ramp	600	2	1.50	2,952	4,323	1732.6	70.87	70	66.7095	25.972	C	2537.217	70.87	70	49.2575	51.509	F
Southbound	North of Metro Parkway Off-Ramp	3300	2	2.00	2,082	3,133	1221.95	69.64	70	69.9944	17.458	B	1838.739	69.64	70	65.2673	28.172	D
Southbound	North of SR-99 Northbound Off-Ramp	Analyzed as a weaving segment																
Southbound	North of SR-99 Southbound On-Ramp	2100	2	2.17	2,327	3,325	1365.87	69.24	70	69.6809	19.602	C	1951.435	69.24	70	63.45	30.755	D
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	1.33	1,639	2,242	962.305	71.3	70	69.3446	13.877	B	1315.692	71.3	70	69.8447	18.837	C
Northbound	North of Metro Parkway Diagonal On-Ramp	1700	2	2.00	3,449	3,542	2024.7	69.64	70	62.1106	32.598	D	2078.736	69.64	70	61.0427	34.054	D
Northbound	North of SR-99 Southbound On-Ramp	2400	2	2.33	3,489	3,042	2048.18	68.84	70	61.655	33.22	D	1785.258	68.84	70	66.0267	27.038	D
Northbound	North of SR-99 Northbound Off-Ramp	0	2	2.33	2,616	2,693	1535.76	68.84	70	68.6923	22.357	C	1580.41	68.84	70	68.3213	23.132	C

Univeral Inputs:
PHF 0.92
(P_T) 16%
f_{HV} 0.925925926

Cumulative Plus MPU Conditions

Segment Inputs					AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	2	1	1238	5502	3792	1710	6459	4451	2007	127	1	4451	4800	0	3338	4451	1.346	47.17	F
SB	Metro Pkwy Loop On-Ramp	2	1	900	2682	1482	1200	3148	1740	1409	50	1	1740	4800	0	1305	1740	0.656	23.74	C
SB	Metro Pkwy Diagonal On-Ramp	2	1	1200	2772	2682	90	3254	3148	106	90	1	3148	4800	0	2361	3148	0.678	23.28	C
NB	Airport Blvd Diagonal On-Ramp	2	1	210	1639	1089	550	1925	1279	646	37	1	1279	4800	0	959	1279	0.401	18.87	B
NB	Airport Blvd Loop On-Ramp	2	1	235	1089	899	190	1279	1056	223	30	1	1056	4800	0	792	1056	0.266	13.87	B
NB	Metro Pkwy Diagonal On-Ramp	2	1	800	3449	2249	1200	4049	2641	1409	75	1	2641	4800	0	1981	2641	0.844	31.4	D
NB	Metro Pkwy Loop On-Ramp	2	1	600	2249	2159	90	2641	2535	106	72	1	2535	4800	0	1901	2535	0.55	22.26	C

Segment Inputs		PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	8253	5693	2560	9688	6683	3005	191	1	6683	4800	0	5012	6683	2.018	71.9	F
SB	Metro Pkwy Loop On-Ramp	4053	2573	1480	4757	3020	1737	86	1	3020	4800	0	2265	3020	0.991	36.14	E
SB	Metro Pkwy Diagonal On-Ramp	4263	4053	210	5004	4757	247	136	1	4757	4800	0	3568	4757	1.043	36.87	F
NB	Airport Blvd Diagonal On-Ramp	2242	1462	780	2631	1716	916	49	1	1716	4800	0	1287	1716	0.548	24.26	C
NB	Airport Blvd Loop On-Ramp	1462	1362	100	1716	1598	117	46	1	1598	4800	0	1199	1598	0.357	17.33	B
NB	Metro Pkwy Diagonal On-Ramp	3542	2062	1480	4157	2420	1737	69	1	2420	4800	0	1815	2420	0.866	32.09	D
NB	Metro Pkwy Loop On-Ramp	2062	1852	210	2420	2174	247	62	1	2174	4800	0	1630	2174	0.504	20.48	C

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Cumulative Plus MPU Conditions

	Segment Inputs					AM Flow Inputs														
		Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)	Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Airport Blvd Off-Ramp	2	1		315	2112	2952	840	-	3465	986.1	1	3465	4800	0	2599	3465	0.722	31.22	D
SB	Metro Pkwy Off-Ramp	2	1		500	1482	2082	600	-	2444	704.3	1	2444	4800	0	1833	2444	0.509	20.77	C
NB	Airport Blvd Off-Ramp	2	1		1770	899	3449	2550	-	4049	2993	1	4049	4800	0	3037	4049	0.844	23.15	C
NB	Metro Pkwy Off-Ramp	2	2		200	2159	3489	1330	-	4096	1561	1	4096	4800	0	3072	4096	0.853	37.68	E

		PM Flow Inputs			PM LOS Performance Measures											
		Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Airport Blvd Off-Ramp	2953	4323	1370	-	5074	1608	1	5074	4800	0	3806	5074	1.057	45.06	F
SB	Metro Pkwy Off-Ramp	2573	3133	560	-	3677	657.4	1	3677	4800	0	2758	3677	0.766	31.38	D
NB	Airport Blvd Off-Ramp	1362	3542	2180	-	4157	2559	1	4157	4800	0	3118	4157	0.866	24.08	C
NB	Metro Pkwy Off-Ramp	1852	3042	1190	-	3571	1397	1	3571	4800	0	2678	3571	0.744	33.16	D

Univeral Inputs:

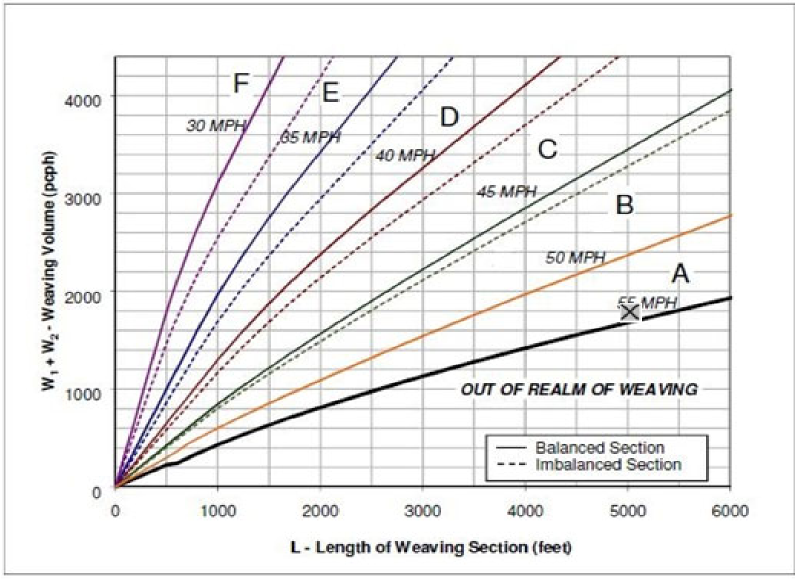
Leng 1500 (ft)
S_{FF} 70 (mi/h)
S_{FR} 35 (mi/h)
PHF 0.92
(P_T) 16%
f_{HV} 0.925925926

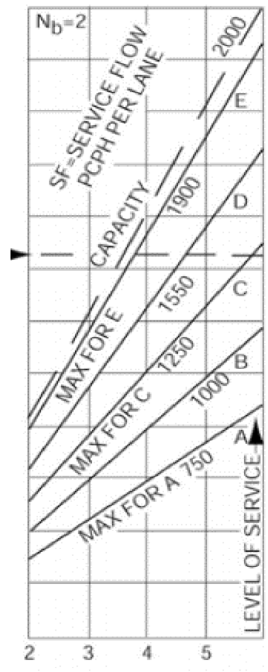
I-5 Southbound, North of SR-99 Northbound Off-Ramp Cumulative Plus MPU (AM)

Number of Entering Mainline Lanes	Nb	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	5025

Total Weaving Section (V)		On ramp to Mainline (W1)		Mainline to Off ramp (W2)	
Volume (vph)	2,692	Volume (vph)	1,290	Volume (vph)	445
Truck Percentage	16%	Truck Percentage	16%	Truck Percentage	16%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,907	Volume (pcph)	1,393	Volume (pcph)	481

W1 + W2	1,874
In between	
Speed 1	50
Speed 2	55
Interpolated Weaving Speed (Sw, mph)	55.0
Weaving Intensity Factor (k)	1.60
Service Volume ((SV, pcph)	
SV = (1/N)*[V+(k-1)*min(W1,W2)]	1,065
Level of Service (LOS)	C



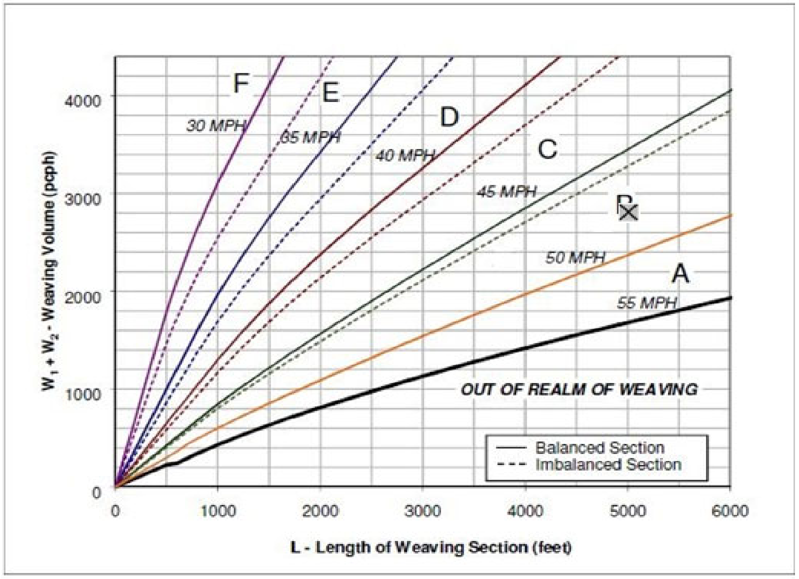


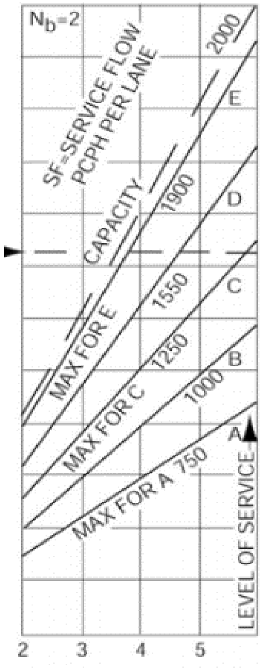
I-5 Southbound, North of SR-99 Northbound Off-Ramp Cumulative Plus MPU (PM)

Number of Entering Mainline Lanes	Nb	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	5025

Total Weaving Section (V)		On ramp to Mainline (W1)		Mainline to Off ramp (W2)	
Volume (vph)	4,263	Volume (vph)	1,690	Volume (vph)	938
Truck Percentage	16%	Truck Percentage	16%	Truck Percentage	16%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,604	Volume (pcph)	1,825	Volume (pcph)	1,013

W1 + W2	2,838
In between	
Speed 1	50
Speed 2	55
Interpolated Weaving Speed (Sw, mph)	46.0
Weaving Intensity Factor (k)	1.60
Service Volume ((SV, pcph)	
SV = (1/N)*[V+(k-1)*min(W1,W2)]	1,737
Level of Service (LOS)	E
OUT OF REALM	





Segment Inputs					Cumulative Plus Cargo Plus MPU Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	2	1.50	2,932	4,313	1720.86	70.87	70	66.8529	25.741	C	2531.348	70.87	70	49.4392	51.201	F
	North of Metro Parkway Off-Ramp	3300	2	2.00	2,082	3,133	1221.95	69.64	70	69.9944	17.458	B	1838.739	69.64	70	65.2673	28.172	D
	North of SR-99 Northbound Off-Ramp	Analyzed as a weaving segment																
	North of SR-99 Southbound On-Ramp	2100	2	2.17	2,427	3,335	1424.56	69.24	70	69.415	20.522	C	1957.304	69.24	70	63.3473	30.898	D
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	1.33	1,769	2,262	1038.61	71.3	70	69.6979	14.902	B	1327.432	71.3	70	69.8116	19.014	C
	North of Metro Parkway Diagonal On-Ramp	1700	2	2.00	3,569	3,552	2095.13	69.64	70	60.7054	34.513	D	2084.605	69.64	70	60.9227	34.217	D
	North of SR-99 Southbound On-Ramp	2400	2	2.33	3,489	3,042	2048.18	68.84	70	61.655	33.22	D	1785.258	68.84	70	66.0267	27.038	D
	North of SR-99 Northbound Off-Ramp	0	2	2.33	2,616	2,693	1535.76	68.84	70	68.6923	22.357	C	1580.41	68.84	70	68.3213	23.132	C

Univeral Inputs:

PHF	0.92
(P_T)	16%
f_{HV}	0.925925926

Cumulative Plus Cargo Plus MPU Conditions

		Segment Inputs			AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	2	1	1238	5502	3792	1710	6459	4451	2007	127	1	4451	4800	0	3338	4451	1.346	47.17	F
SB	Metro Pkwy Loop On-Ramp	2	1	900	2782	1472	1310	3266	1728	1538	49	1	1728	4800	0	1296	1728	0.68	24.6	C
SB	Metro Pkwy Diagonal On-Ramp	2	1	1200	2872	2782	90	3371	3266	106	93	1	3266	4800	0	2449	3266	0.702	24.2	C
NB	Airport Blvd Diagonal On-Ramp	2	1	210	1769	1219	550	2077	1432	646	41	1	1432	4800	0	1074	1432	0.433	20.06	C
NB	Airport Blvd Loop On-Ramp	2	1	235	1219	1029	190	1432	1209	223	35	1	1209	4800	0	906	1209	0.298	15.07	B
NB	Metro Pkwy Diagonal On-Ramp	2	1	800	3569	2259	1310	4190	2652	1538	76	1	2652	4800	0	1989	2652	0.873	32.44	D
NB	Metro Pkwy Loop On-Ramp	2	1	600	2259	2169	90	2652	2547	106	73	1	2547	4800	0	1910	2547	0.553	22.35	C

		PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	8273	5703	2570	9711	6694	3017	191	1	6694	4800	0	5021	6694	2.023	72.07	F
SB	Metro Pkwy Loop On-Ramp	4063	2573	1490	4769	3020	1749	86	1	3020	4800	0	2265	3020	0.994	36.23	E
SB	Metro Pkwy Diagonal On-Ramp	4273	4063	210	5016	4769	247	136	1	4769	4800	0	3577	4769	1.045	36.96	F
NB	Airport Blvd Diagonal On-Ramp	2262	1482	780	2655	1739	916	50	1	1739	4800	0	1304	1739	0.553	24.45	C
NB	Airport Blvd Loop On-Ramp	1482	1372	110	1739	1610	129	46	1	1610	4800	0	1208	1610	0.362	17.51	B
NB	Metro Pkwy Diagonal On-Ramp	3552	2062	1490	4169	2420	1749	69	1	2420	4800	0	1815	2420	0.869	32.17	D
NB	Metro Pkwy Loop On-Ramp	2062	1852	210	2420	2174	247	62	1	2174	4800	0	1630	2174	0.504	20.48	C

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

						Cumulative Plus Cargo Plus MPU Conditions																													
Segment Inputs						AM Flow Inputs															PM Flow Inputs			PM LOS Performance Measures											
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	2	1		315	2072	2932	860	-	3442	1010	1	3442	4800	0	2581	3442	0.717	31.02	D	2923	4313	1390	-	5063	1632	1	5063	4800	0	3797	5063	1.055	44.96	F
SB	Metro Pkwy Off-Ramp	2	1		500	1472	2082	610	-	2444	716.1	1	2444	4800	0	1833	2444	0.509	20.77	C	2573	3133	560	-	3677	657.4	1	3677	4800	0	2758	3677	0.766	31.38	D
NB	Airport Blvd Off-Ramp	2	1		1770	1029	3569	2540	-	4190	2982	1	4190	4800	0	3143	4190	0.873	24.36	C	1372	3552	2180	-	4169	2559	1	4169	4800	0	3127	4169	0.869	24.18	C
NB	Metro Pkwy Off-Ramp	2	2		200	2169	3489	1320	-	4096	1550	1	4096	4800	0	3072	4096	0.853	37.68	E	1852	3042	1190	-	3571	1397	1	3571	4800	0	2678	3571	0.744	33.16	D

Univeral Inputs:

Leng 1500 (ft)

S_{FF} 70 (mi/h)

S_{FR} 35 (mi/h)

PHF 0.92

(P_T) 16%

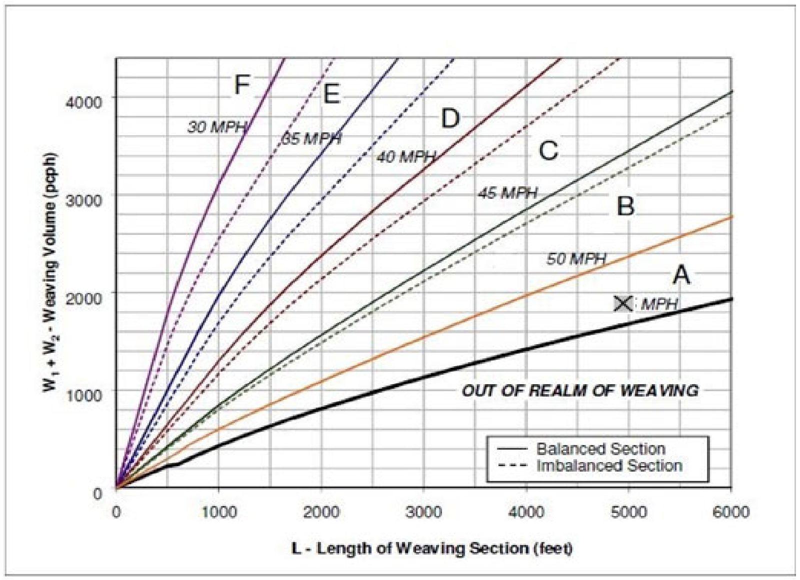
f_{HV} 0.925925926

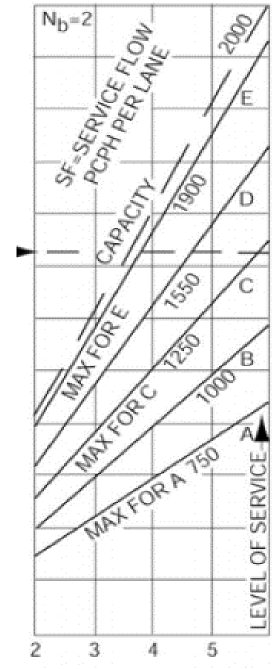
I-5 Southbound, North of SR-99 Northbound Off-Ramp Cumulative Plus Cargo and MPU (AM)

Number of Entering Mainline Lanes	Nb	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	5025

Total Weaving Section (V)		On ramp to Mainline (W1)		Mainline to Off ramp (W2)	
Volume (vph)	2,692	Volume (vph)	1,400	Volume (vph)	445
Truck Percentage	16%	Truck Percentage	16%	Truck Percentage	16%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,907	Volume (pcph)	1,512	Volume (pcph)	481

W1 + W2	1,993
In between	
Speed 1	50
Speed 2	55
Interpolated Weaving Speed (Sw, mph)	54.0
Weaving Intensity Factor (k)	1.60
Service Volume ((SV, pcph)	
SV = (1/N)*[V+(k-1)*min(W1,W2)]	1,065
Level of Service (LOS)	C



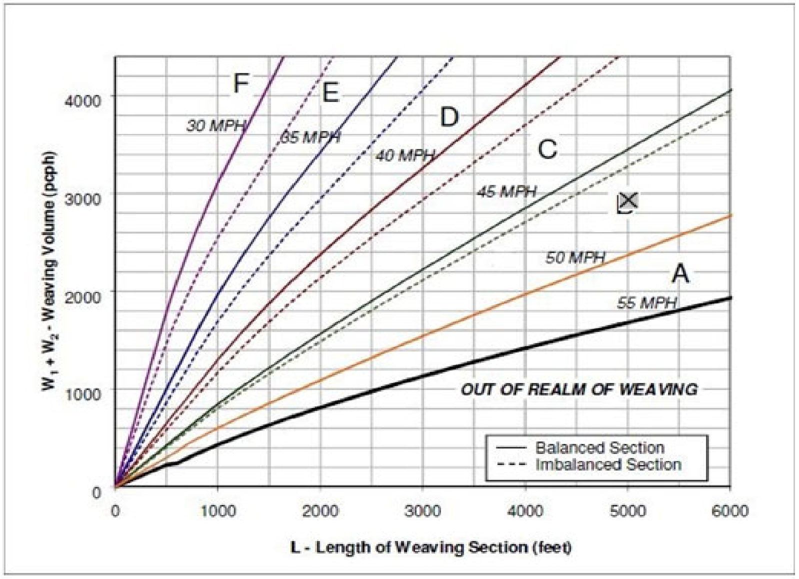


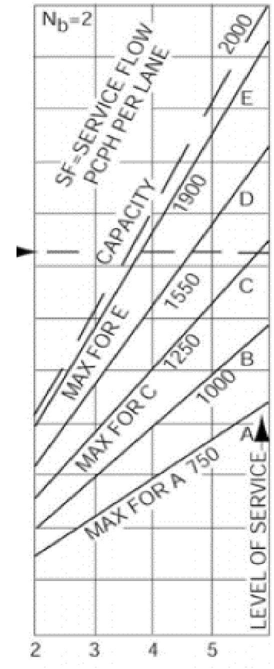
I-5 Southbound, North of SR-99 Northbound Off-Ramp Cumulative Plus Cargo and MPU (AM)

Number of Entering Mainline Lanes	Nb	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	5025

Total Weaving Section (V)		On ramp to Mainline (W1)		Mainline to Off ramp (W2)	
Volume (vph)	4,273	Volume (vph)	1,700	Volume (vph)	938
Truck Percentage	16%	Truck Percentage	16%	Truck Percentage	16%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,614	Volume (pcph)	1,836	Volume (pcph)	1,013

W1 + W2	2,849
In between	
Speed 1	45
Speed 2	50
Interpolated Weaving Speed (Sw, mph)	46.0
Weaving Intensity Factor (k)	1.60
Service Volume ((SV, pcph)	
SV = (1/N)*[V+(k-1)*min(W1,W2)]	1,741
Level of Service (LOS)	E





	Segment Inputs				Existing Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	2,027	1,598	1156.71	72.18	70	69.9783	16.53	B	911.9022	72.18	70	69.0372	13.209	B
	North of Elkhorn Rd Off-Ramp	3500	2	1.33	2,180	1,628	1244.02	71.3	70	69.9775	17.777	B	929.0217	71.3	70	69.1482	13.435	B
	North of I-5 Northbound Off-Ramp	0	2	1.63	2,910	2,171	1660.6	70.56	70	67.5391	24.587	C	1238.886	70.56	70	69.9825	17.703	B
	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,037	1,822	1162.42	70.56	70	69.9836	16.61	B	1039.728	70.56	70	69.702	14.917	B
Northbound	North of Elverta Road Diagonal On-Ramp	5900	2	1.00	1,279	2,869	729.864	72.18	70	67.4361	10.823	A	1637.201	72.18	70	67.7827	24.154	C
	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,328	3,360	757.826	71.3	70	67.732	11.189	B	1917.391	71.3	70	64.0301	29.945	D
	North of I-5 Southbound On-Ramp	-700	2	1.63	1,967	4,313	1122.47	70.56	70	69.9303	16.051	B	2461.223	70.56	70	51.5481	47.746	F
	South of I-5 Southbound On-Ramp	700	2	1.63	1,615	3,375	921.603	70.56	70	69.1009	13.337	B	1925.951	70.56	70	63.8867	30.146	D

Univeral Inputs:

PHF	0.92
(P_T)	10%
f_{HV}	0.952380952

	Segment Inputs				Existing Conditions: AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/h)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	2	1	280	2169	1872	297	2475	2137	339	61	1	2137	4800	0	1602	2137	0.516	22.87	C
SB	Elverta Rd Diagonal On-Ramp	2	2	265	2180	2169	11	2488	2475	13	71	1	2475	4800	0	1857	2475	0.518	23.21	C
SB	Elkhorn Boulevard Loop On-Ramp	2	1	235	2822	2047	775	3221	2336	885	67	1	2336	4800	0	1752	2336	0.671	28.72	D
SB	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	2910	2822	88	3321	3221	100	92	1	3221	4800	0	2416	3221	0.692	30.46	D
NB	Elverta Rd Diagonal On-Ramp	2	1	260	1279	1231	48	1460	1405	55	40	1	1405	4800	0	1054	1405	0.304	15.21	B
NB	Elverta Road Loop On-Ramp	2	1	290	1231	1221	10	1405	1394	11	40	1	1394	4800	0	1045	1394	0.293	14.61	B
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1328	1222	106	1516	1395	121	40	1	1395	4800	0	1046	1395	0.316	15.74	B
NB	Elkhorn Boulevard Loop On-Ramp	2	1	255	1222	1218	4	1395	1390	5	40	1	1390	4800	0	1043	1390	0.291	14.75	B
NB	I-5 Southbound On-Ramp	2	1	100	1967	1615	352	2245	1843	402	53	1	1843	4800	0	1382	1843	0.468	22.17	C

		Existing Conditions: PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/hr)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	1605	1526	79	1832	1742	90	50	1	1742	4800	0	1306	1742	0.382	17.97	B
SB	Elverta Rd Diagonal On-Ramp	1628	1605	23	1858	1832	26	52	1	1832	4800	0	1374	1832	0.387	18.29	B
SB	Elkhorn Boulevard Loop On-Ramp	1857	1502	355	2119	1714	405	49	1	1714	4800	0	1286	1714	0.442	20.35	C
SB	Elkhorn Boulevard Diagonal On-Ramp	2171	1857	314	2478	2119	358	61	1	2119	4800	0	1590	2119	0.516	23.76	C
NB	Elverta Rd Diagonal On-Ramp	2869	2817	52	3274	3215	59	92	1	3215	4800	0	2411	3215	0.682	29.36	D
NB	Elverta Road Loop On-Ramp	2817	2763	54	3215	3153	62	90	1	3153	4800	0	2365	3153	0.67	28.71	D
NB	Elkhorn Boulevard Diagonal On-Ramp	3360	3223	137	3835	3678	156	105	1	3678	4800	0	2759	3678	0.799	33.81	D
NB	Elkhorn Boulevard Loop On-Ramp	3223	3173	50	3678	3621	57	103	1	3621	4800	0	2716	3621	0.766	32.54	D
NB	I-5 Southbound On-Ramp	4313	3375	938	4922	3852	1071	110	1	3852	4800	0	2889	3852	1.026	42.75	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

						Existing Conditions																													
Segment Inputs						AM Flow Inputs																PM Flow Inputs			PM LOS Performance Measures											
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Off-Ramp	2	1		540	1872	2027	155	-	2313	176.9	1	2313	4800	0	1735	2313	0.482	19.29	B	1526	1598	72	-	1824	82.17	1	1824	4800	0	1368	1824	0.38	15.08	B
SB	Elkhorn Rd Off-Ramp	2	1		220	2047	2180	133	-	2488	151.8	1	2488	4800	0	1866	2488	0.518	23.67	C	1502	1628	126	-	1858	143.8	1	1858	4800	0	1394	1858	0.387	18.25	B
SB	I-5 Northbound Off-Ramp	2	1		440	2037	2910	873	-	3321	996.4	1	3321	4800	0	2491	3321	0.692	28.85	D	1822	2171	349	-	2478	398.3	1	2478	4800	0	1858	2478	0.516	21.6	C
NB	Elverta Road Off-Ramp	2	1		1445	1221	1328	107	-	1516	122.1	1	1516	4800	0	1137	1516	0.316	4.282	A	2763	3360	597	-	3835	681.4	1	3835	4800	0	2876	3835	0.799	24.23	C
NB	Elkhorn Rd Off-Ramp	2	2		255	1218	1967	749	-	2245	854.8	1	2245	4800	0	1684	2245	0.468	21.26	C	3173	4313	1140	-	4922	1301	1	4922	4800	0	3692	4922	1.026	44.29	F

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

Segment Inputs					Existing+Cargo Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	2,027	1,598	1156.71	72.18	70	69.9783	16.53	B	911.9022	72.18	70	69.0372	13.209	B
	North of Elkhorn Rd Off-Ramp	3500	2	1.33	2,197	1,748	1253.72	71.3	70	69.9665	17.919	B	997.5	71.3	70	69.5243	14.347	B
	North of I-5 Northbound Off-Ramp	0	2	1.63	2,997	2,278	1710.24	70.56	70	66.9799	25.534	C	1299.946	70.56	70	69.8841	18.601	C
	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,124	1,929	1212.07	70.56	70	69.9983	17.316	B	1100.788	70.56	70	69.8858	15.751	B
Northbound	North of Elverta Road Diagonal On-Ramp	5900	2	1.00	1,107	2,833	631.712	72.18	70	66.2538	9.5347	A	1616.658	72.18	70	67.9862	23.779	C
	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,337	3,363	762.962	71.3	70	67.7844	11.256	B	1919.103	71.3	70	64.0015	29.985	D
	North of I-5 Southbound On-Ramp	-700	2	1.63	1,967	4,313	1122.47	70.56	70	69.9303	16.051	B	2461.223	70.56	70	51.5481	47.746	F
	South of I-5 Southbound On-Ramp	700	2	1.63	1,615	3,375	921.603	70.56	70	69.1009	13.337	B	1925.951	70.56	70	63.8867	30.146	D

Univeral Inputs:

PHF	0.92
(P_T)	10%
f_{HV}	0.952380952

Existing+Cargo Conditions

	Segment Inputs	Number of Lanes (N)	Number of Ramp Lanes	Length of Acceleration Lane (L_A) (ft)	AM Flow Inputs: Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	AM LOS Performance Measures: v_D (pc/h)	v_F (pc/h)	v_R (pc/h)	v_F/S_{FR}	P_{FM}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Loop On-Ramp	2	1	280	2147	1847	300	2450	2108	342	60	1	2108	4800	0	1581	2108	0.51	22.67	C
SB	Elverta Rd Diagonal On-Ramp	2	2	265	2197	2147	50	2507	2450	57	70	1	2450	4800	0	1838	2450	0.522	23.35	C
SB	Elkhorn Boulevard Loop On-Ramp	2	1	235	2847	2057	790	3249	2348	902	67	1	2348	4800	0	1761	2348	0.677	28.93	D
SB	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	2997	2847	150	3420	3249	171	93	1	3249	4800	0	2437	3249	0.713	31.2	D
NB	Elverta Rd Diagonal On-Ramp	2	1	260	1107	1047	60	1263	1195	68	34	1	1195	4800	0	896	1195	0.263	13.67	B
NB	Elverta Road Loop On-Ramp	2	1	290	1047	1017	30	1195	1161	34	33	1	1161	4800	0	871	1161	0.249	12.96	B
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1337	1217	120	1526	1389	137	40	1	1389	4800	0	1042	1389	0.318	15.81	B
NB	Elkhorn Boulevard Loop On-Ramp	2	1	255	1217	1207	10	1389	1378	11	39	1	1378	4800	0	1033	1378	0.289	14.7	B
NB	I-5 Southbound On-Ramp	2	1	100	1967	1615	352	2245	1843	402	53	1	1843	4800	0	1382	1843	0.468	22.17	C

	Segment Inputs	PM Flow Inputs: Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	PM LOS Performance Measures: v_D (pc/h)	v_F (pc/hr)	v_R (pc/h)	v_F/S_{FR}	P_{FM}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Loop On-Ramp	1588	1508	80	1812	1721	91	49	1	1721	4800	0	1291	1721	0.378	17.81	B
SB	Elverta Rd Diagonal On-Ramp	1748	1588	160	1995	1812	183	52	1	1812	4800	0	1359	1812	0.416	19.29	B
SB	Elkhorn Boulevard Loop On-Ramp	1958	1598	360	2235	1824	411	52	1	1824	4800	0	1368	1824	0.466	21.24	C
SB	Elkhorn Boulevard Diagonal On-Ramp	2278	1958	320	2600	2235	365	64	1	2235	4800	0	1676	2235	0.542	24.71	C
NB	Elverta Rd Diagonal On-Ramp	2833	2763	70	3233	3153	80	90	1	3153	4800	0	2365	3153	0.674	29.03	D
NB	Elverta Road Loop On-Ramp	2763	2693	70	3153	3074	80	88	1	3074	4800	0	2305	3074	0.657	28.22	D
NB	Elkhorn Boulevard Diagonal On-Ramp	3363	3223	140	3838	3678	160	105	1	3678	4800	0	2759	3678	0.8	33.83	D
NB	Elkhorn Boulevard Loop On-Ramp	3223	3163	60	3678	3610	68	103	1	3610	4800	0	2707	3610	0.766	32.54	D
NB	I-5 Southbound On-Ramp	4313	3375	938	4922	3852	1071	110	1	3852	4800	0	2889	3852	1.026	42.75	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

Existing+Cargo Conditions

Segment Inputs / AM Flow Inputs

	Segment	Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)	Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	2	1		540	1847	2027	180	-	2313	205.4	1	2313	4800	0	1735	2313	0.482	19.29	B
SB	Elkhorn Rd Off-Ramp	2	1		220	2057	2197	140	-	2507	159.8	1	2507	4800	0	1881	2507	0.522	23.84	C
SB	I-5 Northbound Off-Ramp	2	1		440	2124	2997	873	-	3420	996.4	1	3420	4800	0	2565	3420	0.713	29.71	D
NB	Elverta Road Off-Ramp	2	1		1445	1017	1337	320	-	1526	365.2	1	1526	4800	0	1144	1526	0.318	4.37	A
NB	Elkhorn Rd Off-Ramp	2	2		255	1207	1967	760	-	2245	867.4	1	2245	4800	0	1684	2245	0.468	21.26	C

PM Flow Inputs / PM LOS Performance Measures

	Segment	Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	1508	1598	90	-	1824	102.7	1	1824	4800	0	1368	1824	0.38	15.08	B
SB	Elkhorn Rd Off-Ramp	1598	1748	150	-	1995	171.2	1	1995	4800	0	1496	1995	0.416	19.43	B
SB	I-5 Northbound Off-Ramp	1929	2278	349	-	2600	398.3	1	2600	4800	0	1950	2600	0.542	22.65	C
NB	Elverta Road Off-Ramp	2693	3363	670	-	3838	764.7	1	3838	4800	0	2879	3838	0.8	24.26	C
NB	Elkhorn Rd Off-Ramp	3163	4313	1150	-	4922	1313	1	4922	4800	0	3692	4922	1.026	44.29	F

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

	Segment Inputs				Existing+MPU Conditions: Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length (ft)	Number of Lanes (N)	Interchange Density (I/mi)	AM Peak (veh/h)	PM Peak (veh/h)	V_p (pc/h/ln)	FFS (mi/h)		S (mi/h)	D (pc/mi/ln)	LOS	V_p (pc/h/ln)	FFS (mi/h)		S (mi/h)	D (pc/mi/ln)	LOS
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	2,027	1,598	1156.71	72.18	70	69.9783	16.53	B	911.9022	72.18	70	69.0372	13.209	B
Southbound	North of Elkhorn Rd Off-Ramp	3500	2	1.33	2,250	1,648	1283.97	71.3	70	69.9182	18.364	C	940.4348	71.3	70	69.2185	13.586	B
Southbound	North of I-5 Northbound Off-Ramp	0	2	1.63	2,980	2,191	1700.54	70.56	70	67.0937	25.346	C	1250.299	70.56	70	69.9707	17.869	B
Southbound	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,107	1,842	1202.36	70.56	70	69.9999	17.177	B	1051.141	70.56	70	69.743	15.072	B
Northbound	North of Elverta Road Diagonal On-Ramp	5900	2	1.00	1,219	2,769	695.625	72.18	70	67.049	10.375	A	1580.136	72.18	70	68.3238	23.127	C
Northbound	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,298	3,310	740.707	71.3	70	67.553	10.965	A	1888.859	71.3	70	64.4955	29.287	D
Northbound	North of I-5 Southbound On-Ramp	-700	2	1.63	1,967	4,313	1122.47	70.56	70	69.9303	16.051	B	2461.223	70.56	70	51.5481	47.746	F
Northbound	South of I-5 Southbound On-Ramp	700	2	1.63	1,615	3,375	921.603	70.56	70	69.1009	13.337	B	1925.951	70.56	70	63.8867	30.146	D

Univeral Inputs:

PHF 0.92

(P_T) 10%

f_{HV} 0.952380952

Existing+MPU Conditions

	Segment Inputs				AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/h)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	2	1	280	2239	1872	367	2555	2137	419	61	1	2137	4800	0	1602	2137	0.532	23.46	C
SB	Elverta Rd Diagonal On-Ramp	2	2	265	2250	2239	11	2568	2555	13	73	1	2555	4800	0	1917	2555	0.535	23.84	C
SB	Elkhorn Boulevard Loop On-Ramp	2	1	235	2892	2117	775	3301	2416	885	69	1	2416	4800	0	1812	2416	0.688	29.34	D
SB	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	2980	2892	88	3401	3301	100	94	1	3301	4800	0	2475	3301	0.709	31.08	D
NB	Elverta Rd Diagonal On-Ramp	2	1	260	1219	1161	58	1391	1325	66	38	1	1325	4800	0	994	1325	0.29	14.67	B
NB	Elverta Road Loop On-Ramp	2	1	290	1161	1151	10	1325	1314	11	38	1	1314	4800	0	985	1314	0.276	13.99	B
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1298	1192	106	1481	1360	121	39	1	1360	4800	0	1020	1360	0.309	15.47	B
NB	Elkhorn Boulevard Loop On-Ramp	2	1	255	1192	1188	4	1360	1356	5	39	1	1356	4800	0	1017	1356	0.283	14.49	B
NB	I-5 Southbound On-Ramp	2	1	100	1967	1615	352	2245	1843	402	53	1	1843	4800	0	1382	1843	0.468	22.17	C

	Segment	PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/hr)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	1625	1526	99	1855	1742	113	50	1	1742	4800	0	1306	1742	0.386	18.13	B
SB	Elverta Rd Diagonal On-Ramp	1648	1625	23	1881	1855	26	53	1	1855	4800	0	1391	1855	0.392	18.47	B
SB	Elkhorn Boulevard Loop On-Ramp	1877	1522	355	2142	1737	405	50	1	1737	4800	0	1303	1737	0.446	20.52	C
SB	Elkhorn Boulevard Diagonal On-Ramp	2191	1877	314	2501	2142	358	61	1	2142	4800	0	1607	2142	0.521	23.94	C
NB	Elverta Rd Diagonal On-Ramp	2769	2717	52	3160	3101	59	89	1	3101	4800	0	2326	3101	0.658	28.47	D
NB	Elverta Road Loop On-Ramp	2717	2663	54	3101	3039	62	87	1	3039	4800	0	2279	3039	0.646	27.82	C
NB	Elkhorn Boulevard Diagonal On-Ramp	3310	3173	137	3778	3621	156	103	1	3621	4800	0	2716	3621	0.787	33.36	D
NB	Elkhorn Boulevard Loop On-Ramp	3173	3123	50	3621	3564	57	102	1	3564	4800	0	2673	3564	0.754	32.1	D
NB	I-5 Southbound On-Ramp	4313	3375	938	4922	3852	1071	110	1	3852	4800	0	2889	3852	1.026	42.75	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

		Segment Inputs				AM Flow Inputs			Existing+MPU Conditions												PM Flow Inputs			PM LOS Performance Measures											
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Off-Ramp	2	1		540	1872	2027	155	-	2313	176.9	1	2313	4800	0	1735	2313	0.482	19.29	B	1526	1598	72	-	1824	82.17	1	1824	4800	0	1368	1824	0.38	15.08	B
SB	Elkhorn Rd Off-Ramp	2	1		220	2117	2250	133	-	2568	151.8	1	2568	4800	0	1926	2568	0.535	24.36	C	1522	1648	126	-	1881	143.8	1	1881	4800	0	1411	1881	0.392	18.45	B
SB	I-5 Northbound Off-Ramp	2	1		440	2107	2980	873	-	3401	996.4	1	3401	4800	0	2551	3401	0.709	29.54	D	1842	2191	349	-	2501	398.3	1	2501	4800	0	1875	2501	0.521	21.8	C
NB	Elverta Road Off-Ramp	2	1		1445	1151	1298	147	-	1481	167.8	1	1481	4800	0	1111	1481	0.309	3.987	A	2663	3310	647	-	3778	738.4	1	3778	4800	0	2833	3778	0.787	23.74	C
NB	Elkhorn Rd Off-Ramp	2	2		255	1188	1967	779	-	2245	889.1	1	2245	4800	0	1684	2245	0.468	21.26	C	3123	4313	1190	-	4922	1358	1	4922	4800	0	3692	4922	1.026	44.29	F

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

					Existing+Cargo+MPU Conditions													
Segment Inputs					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	2,027	1,598	1156.71	72.18	70	69.9783	16.53	B	911.9022	72.18	70	69.0372	13.209	B
	North of Elkhorn Rd Off-Ramp	3500	2	1.33	2,197	1,768	1253.72	71.3	70	69.9665	17.919	B	1008.913	71.3	70	69.5764	14.501	B
	North of I-5 Northbound Off-Ramp	0	2	1.63	2,997	2,298	1710.24	70.56	70	66.9799	25.534	C	1311.359	70.56	70	69.8562	18.772	C
	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,124	1,949	1212.07	70.56	70	69.9983	17.316	B	1112.201	70.56	70	69.9106	15.909	B
Northbound	North of Elverta Road Diagonal On-Ramp	5900	2	1.00	1,107	2,733	631.712	72.18	70	66.2538	9.5347	A	1559.592	72.18	70	68.5	22.768	C
	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,337	3,303	762.962	71.3	70	67.7844	11.256	B	1884.864	71.3	70	64.5591	29.196	D
	North of I-5 Southbound On-Ramp	-700	2	1.63	1,967	4,313	1122.47	70.56	70	69.9303	16.051	B	2461.223	70.56	70	51.5481	47.746	F
	South of I-5 Southbound On-Ramp	700	2	1.63	1,615	3,375	921.603	70.56	70	69.1009	13.337	B	1925.951	70.56	70	63.8867	30.146	D

Univeral Inputs:

PHF	0.92
(P_T)	10%
f_{HV}	0.952380952

Existing+Cargo+MPU Conditions

	Segment Inputs				AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/h)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
	Elverta Road Loop On-Ramp	2	1	280	2147	1847	300	2450	2108	342	60	1	2108	4800	0	1581	2108	0.51	22.67	C
SB	Elverta Rd Diagonal On-Ramp	2	2	265	2197	2147	50	2507	2450	57	70	1	2450	4800	0	1838	2450	0.522	23.35	C
	Elkhorn Boulevard Loop On-Ramp	2	1	235	2847	2057	790	3249	2348	902	67	1	2348	4800	0	1761	2348	0.677	28.93	D
	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	2997	2847	150	3420	3249	171	93	1	3249	4800	0	2437	3249	0.713	31.2	D
	Elverta Rd Diagonal On-Ramp	2	1	260	1107	1047	60	1263	1195	68	34	1	1195	4800	0	896	1195	0.263	13.67	B
	Elverta Road Loop On-Ramp	2	1	290	1047	1017	30	1195	1161	34	33	1	1161	4800	0	871	1161	0.249	12.96	B
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1337	1217	120	1526	1389	137	40	1	1389	4800	0	1042	1389	0.318	15.81	B
	Elkhorn Boulevard Loop On-Ramp	2	1	255	1217	1207	10	1389	1378	11	39	1	1378	4800	0	1033	1378	0.289	14.7	B
	I-5 Southbound On-Ramp	2	1	100	1967	1615	352	2245	1843	402	53	1	1843	4800	0	1382	1843	0.468	22.17	C

	Segment Inputs	PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capac ity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/hr)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
	Elverta Road Loop On-Ramp	1608	1508	100	1835	1721	114	49	1	1721	4800	0	1291	1721	0.382	17.98	B
SB	Elverta Rd Diagonal On-Ramp	1768	1608	160	2018	1835	183	52	1	1835	4800	0	1376	1835	0.42	19.47	B
	Elkhorn Boulevard Loop On-Ramp	1978	1618	360	2258	1847	411	53	1	1847	4800	0	1385	1847	0.47	21.42	C
	Elkhorn Boulevard Diagonal On-Ramp	2298	1978	320	2623	2258	365	65	1	2258	4800	0	1693	2258	0.546	24.89	C
	Elverta Rd Diagonal On-Ramp	2733	2663	70	3119	3039	80	87	1	3039	4800	0	2279	3039	0.65	28.14	D
	Elverta Road Loop On-Ramp	2663	2593	70	3039	2959	80	85	1	2959	4800	0	2220	2959	0.633	27.33	C
NB	Elkhorn Boulevard Diagonal On-Ramp	3303	3163	140	3770	3610	160	103	1	3610	4800	0	2707	3610	0.785	33.3	D
	Elkhorn Boulevard Loop On-Ramp	3163	3103	60	3610	3541	68	101	1	3541	4800	0	2656	3541	0.752	32	D
	I-5 Southbound On-Ramp	4313	3375	938	4922	3852	1071	110	1	3852	4800	0	2889	3852	1.026	42.75	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

Existing+Cargo+MPU Conditions

	Segment Inputs					AM Flow Inputs														
		Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)	Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	2	1	-	540	1847	2027	180	-	2313	205.4	1	2313	4800	0	1735	2313	0.482	19.29	B
SB	Elkhorn Rd Off-Ramp	2	1		220	2057	2197	140	-	2507	159.8	1	2507	4800	0	1881	2507	0.522	23.84	C
SB	I-5 Northbound Off-Ramp	2	1		440	2124	2997	873	-	3420	996.4	1	3420	4800	0	2565	3420	0.713	29.71	D
NB	Elverta Road Off-Ramp	2	1		1445	1017	1337	320	-	1526	365.2	1	1526	4800	0	1144	1526	0.318	4.37	A
NB	Elkhorn Rd Off-Ramp	2	2		255	1207	1967	760	-	2245	867.4	1	2245	4800	0	1684	2245	0.468	21.26	C

		PM Flow Inputs			PM LOS Performance Measures											
		Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	1508	1598	90	-	1824	102.7	1	1824	4800	0	1368	1824	0.38	15.08	B
SB	Elkhorn Rd Off-Ramp	1618	1768	150	-	2018	171.2	1	2018	4800	0	1513	2018	0.42	19.63	B
SB	I-5 Northbound Off-Ramp	1949	2298	349	-	2623	398.3	1	2623	4800	0	1967	2623	0.546	22.85	C
NB	Elverta Road Off-Ramp	2593	3303	710	-	3770	810.3	1	3770	4800	0	2827	3770	0.785	23.67	C
NB	Elkhorn Rd Off-Ramp	3103	4313	1210	-	4922	1381	1	4922	4800	0	3692	4922	1.026	44.29	F

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

	Segment Inputs				Cumulative Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	3,757	2,094	2144.15	72.18	70	59.6595	35.94	E	1195.174	72.18	70	69.9997	17.074	B
	North of Elkhorn Rd Off-Ramp	3500	2	1.33	3,357	2,194	1915.89	71.3	70	64.055	29.91	D	1252.239	71.3	70	69.9683	17.897	B
	North of I-5 Northbound Off-Ramp	0	2	1.63	3,817	3,234	2178.39	70.56	70	58.896	36.987	E	1845.717	70.56	70	65.1634	28.324	D
	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,944	2,885	1680.21	70.56	70	67.325	24.957	C	1646.56	70.56	70	67.6868	24.326	C
Northbound	North of Elverta Road Diagonal On-Ramp	5900	2	1.00	932	4,520	531.734	72.18	70	64.8197	8.2033	A	2579.519	72.18	70	47.9244	53.825	F
	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,192	4,340	680.103	71.3	70	66.8646	10.171	A	2476.802	71.3	70	51.0894	48.48	F
	North of I-5 Southbound On-Ramp	-700	2	1.63	2,352	5,280	1342.06	70.56	70	69.7659	19.237	C	3013.215	70.56	70	31.8621	94.57	F
	South of I-5 Southbound On-Ramp	700	2	1.63	2,000	4,342	1141.19	70.56	70	69.9599	16.312	B	2477.943	70.56	70	51.0556	48.534	F

Univeral Inputs:

PHF 0.92

(P_T) 10%

f_{HV} 0.952380952

Cumulative Conditions

	Segment Inputs				AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/h)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	2	1	280	3277	2977	300	3740	3398	342	97	1	3398	4800	0	2549	3398	0.779	32.74	D
SB	Elverta Rd Diagonal On-Ramp	2	2	265	3357	3277	80	3832	3740	91	107	1	3740	4800	0	2805	3740	0.798	33.66	D
SB	Elkhorn Boulevard Loop On-Ramp	2	1	235	3387	2607	780	3866	2976	890	85	1	2976	4800	0	2232	2976	0.805	33.75	D
SB	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	3817	3387	430	4357	3866	491	110	1	3866	4800	0	2900	3866	0.908	38.35	E
NB	Elverta Rd Diagonal On-Ramp	2	1	260	932	712	220	1063	812	251	23	1	812.4	4800	0	609	812	0.222	12.02	B
NB	Elverta Road Loop On-Ramp	2	1	290	712	622	90	812	710	103	20	1	709.7	4800	0	532	710	0.169	9.946	A
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1192	992	200	1360	1132	228	32	1	1132	4800	0	849	1132	0.283	14.47	B
NB	Elkhorn Boulevard Loop On-Ramp	2	1	255	992	822	170	1132	938	194	27	1	937.9	4800	0	703	938	0.236	12.62	B
NB	I-5 Southbound On-Ramp	2	1	100	2352	2000	352	2684	2282	402	65	1	2282	4800	0	1712	2282	0.559	25.6	C

	Segment	PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/hr)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	1894.4	1814	80	2162	2071	91	59	1	2071	4800	0	1553	2071	0.45	20.54	C
SB	Elverta Rd Diagonal On-Ramp	2194.4	1894	300	2504	2162	342	62	1	2162	4800	0	1622	2162	0.522	23.19	C
SB	Elkhorn Boulevard Loop On-Ramp	2024.4	1664	360	2310	1900	411	54	1	1900	4800	0	1425	1900	0.481	21.83	C
SB	Elkhorn Boulevard Diagonal On-Ramp	3234.4	2024	1210	3691	2310	1381	66	1	2310	4800	0	1733	2310	0.769	32.76	D
NB	Elverta Rd Diagonal On-Ramp	4520.3	4300	220	5159	4908	251	140	1	4908	4800	0	3681	4908	1.075	43.97	F
NB	Elverta Road Loop On-Ramp	4300.3	3600	700	4908	4109	799	117	1	4109	4800	0	3082	4109	1.022	41.57	F
NB	Elkhorn Boulevard Diagonal On-Ramp	4340.3	4110	230	4954	4691	263	134	1	4691	4800	0	3518	4691	1.032	42.49	F
NB	Elkhorn Boulevard Loop On-Ramp	4110.3	3740	370	4691	4269	422	122	1	4269	4800	0	3202	4269	0.977	40.27	E
NB	I-5 Southbound On-Ramp	5280.3	4342	938	6026	4956	1071	142	1	4956	4800	0	3717	4956	1.256	51.36	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

						Cumulative Conditions																													
	Segment Inputs					AM Flow Inputs																	PM Flow Inputs			PM LOS Performance Measures											
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Off-Ramp	2	1	-	540	2977	3757	780	-	4288	890.2	1	4288	4800	0	3216	4288	0.893	36.27	E	1814	2094	280	-	2390	319.6	1	2390	4800	0	1793	2390	0.498	19.95	B
SB	Elkhorn Rd Off-Ramp	2	1		220	2607	3357	750	-	3832	856	1	3832	4800	0	2874	3832	0.798	35.23	E	1664	2194	530	-	2504	604.9	1	2504	4800	0	1878	2504	0.522	23.81	C
SB	I-5 Northbound Off-Ramp	2	1		440	2944	3817	873	-	4357	996.4	1	4357	4800	0	3268	4357	0.908	37.76	E	2885	3234	349	-	3691	398.3	1	3691	4800	0	2769	3691	0.769	32.04	D
NB	Elverta Road Off-Ramp	2	1		1445	622	1192	570	-	1360	650.5	1	1360	4800	0	1020	1360	0.283	2.945	A	3600	4340	740	-	4954	844.6	1	4954	4800	0	3715	4954	1.032	33.85	F
NB	Elkhorn Rd Off-Ramp	2	2		255	822	2352	1530	-	2684	1746	1	2684	4800	0	2013	2684	0.559	25.04	C	3740	5280	1540	-	6026	1758	1	6026	4800	0	4520	6026	1.256	53.78	F

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

					Cumulative+Cargo Conditions													
Segment Inputs					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	3,757	2,094	2144.15	72.18	70	59.6595	35.94	E	1195.174	72.18	70	69.9997	17.074	B
	North of Elkhorn Rd Off-Ramp	3500	2	1.33	3,357	2,194	1915.89	71.3	70	64.055	29.91	D	1252.239	71.3	70	69.9683	17.897	B
	North of I-5 Northbound Off-Ramp	0	2	1.63	3,797	3,234	2166.98	70.56	70	59.1535	36.633	E	1845.717	70.56	70	65.1634	28.324	D
	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,924	2,885	1668.8	70.56	70	67.4507	24.741	C	1646.56	70.56	70	67.6868	24.326	C
Northbound	North of Elverta Road Diagonal On-Ramp	5900	2	1.00	932	4,520	531.734	72.18	70	64.8197	8.2033	A	2579.519	72.18	70	47.9244	53.825	F
	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,192	4,340	680.103	71.3	70	66.8646	10.171	A	2476.802	71.3	70	51.0894	48.48	F
	North of I-5 Southbound On-Ramp	-700	2	1.63	2,352	5,280	1342.06	70.56	70	69.7659	19.237	C	3013.215	70.56	70	31.8621	94.57	F
	South of I-5 Southbound On-Ramp	700	2	1.63	2,000	4,342	1141.19	70.56	70	69.9599	16.312	B	2477.943	70.56	70	51.0556	48.534	F

Univeral Inputs:

PHF 0.92

(P_T) 10%

f_{HV} 0.952380952

Cumulative+Cargo Conditions

Segment Inputs					AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/h)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	2	1	280	3277	2977	300	3740	3398	342	97	1	3398	4800	0	2549	3398	0.779	32.74	D
	Elverta Rd Diagonal On-Ramp	2	2	265	3357	3277	80	3832	3740	91	107	1	3740	4800	0	2805	3740	0.798	33.66	D
	Elkhorn Boulevard Loop On-Ramp	2	1	235	3367	2547	820	3843	2907	936	83	1	2907	4800	0	2180	2907	0.801	33.55	D
	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	3797	3367	430	4334	3843	491	110	1	3843	4800	0	2882	3843	0.903	38.18	E
NB	Elverta Rd Diagonal On-Ramp	2	1	260	932	712	220	1063	812	251	23	1	812.4	4800	0	609	812	0.222	12.02	B
	Elverta Road Loop On-Ramp	2	1	290	712	622	90	812	710	103	20	1	709.7	4800	0	532	710	0.169	9.946	A
	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1192	992	200	1360	1132	228	32	1	1132	4800	0	849	1132	0.283	14.47	B
	Elkhorn Boulevard Loop On-Ramp	2	1	255	992	822	170	1132	938	194	27	1	937.9	4800	0	703	938	0.236	12.62	B
	I-5 Southbound On-Ramp	2	1	100	2352	2000	352	2684	2282	402	65	1	2282	4800	0	1712	2282	0.559	25.6	C

		PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/hr)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	1894.4	1814	80	2162	2071	91	59	1	2071	4800	0	1553	2071	0.45	20.54	C
	Elverta Rd Diagonal On-Ramp	2194.4	1894	300	2504	2162	342	62	1	2162	4800	0	1622	2162	0.522	23.19	C
	Elkhorn Boulevard Loop On-Ramp	2024.4	1664	360	2310	1900	411	54	1	1900	4800	0	1425	1900	0.481	21.83	C
	Elkhorn Boulevard Diagonal On-Ramp	3234.4	2024	1210	3691	2310	1381	66	1	2310	4800	0	1733	2310	0.769	32.76	D
NB	Elverta Rd Diagonal On-Ramp	4520.3	4300	220	5159	4908	251	140	1	4908	4800	0	3681	4908	1.075	43.97	F
	Elverta Road Loop On-Ramp	4300.3	3600	700	4908	4109	799	117	1	4109	4800	0	3082	4109	1.022	41.57	F
	Elkhorn Boulevard Diagonal On-Ramp	4340.3	4110	230	4954	4691	263	134	1	4691	4800	0	3518	4691	1.032	42.49	F
	Elkhorn Boulevard Loop On-Ramp	4110.3	3740	370	4691	4269	422	122	1	4269	4800	0	3202	4269	0.977	40.27	E
	I-5 Southbound On-Ramp	5280.3	4342	938	6026	4956	1071	142	1	4956	4800	0	3717	4956	1.256	51.36	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

Cumulative+Cargo Conditions

		Segment Inputs				AM Flow Inputs		
		Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)	Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)
SB	Elverta Road Off-Ramp	2	1	-	540	2977	3757	780
SB	Elkhorn Rd Off-Ramp	2	1		220	2547	3357	810
SB	I-5 Northbound Off-Ramp	2	1		440	2924	3797	873
NB	Elverta Road Off-Ramp	2	1		1445	622	1192	570
NB	Elkhorn Rd Off-Ramp	2	2		255	822	2352	1530

		v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	-	4288	890.2	1	4288	4800	0	3216	4288	0.893	36.27	E
SB	Elkhorn Rd Off-Ramp	-	3832	924.5	1	3832	4800	0	2874	3832	0.798	35.23	E
SB	I-5 Northbound Off-Ramp	-	4334	996.4	1	4334	4800	0	3250	4334	0.903	37.56	E
NB	Elverta Road Off-Ramp	-	1360	650.5	1	1360	4800	0	1020	1360	0.283	2.945	A
NB	Elkhorn Rd Off-Ramp	-	2684	1746	1	2684	4800	0	2013	2684	0.559	25.04	C

		PM Flow Inputs			PM LOS Performance Measures											
		Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	1814	2094	280	-	2390	319.6	1	2390	4800	0	1793	2390	0.498	19.95	B
SB	Elkhorn Rd Off-Ramp	1664	2194	530	-	2504	604.9	1	2504	4800	0	1878	2504	0.522	23.81	C
SB	I-5 Northbound Off-Ramp	2885	3234	349	-	3691	398.3	1	3691	4800	0	2769	3691	0.769	32.04	D
NB	Elverta Road Off-Ramp	3600	4340	740	-	4954	844.6	1	4954	4800	0	3715	4954	1.032	33.85	F
NB	Elkhorn Rd Off-Ramp	3740	5280	1540	-	6026	1758	1	6026	4800	0	4520	6026	1.256	53.78	F

Univeral Inputs:

Leng 1500 (ft)

S_{FF} 70 (mi/h)

S_{FR} 35 (mi/h)

PHF 0.92

(P_T) 10%

f_{HV} 0.952380952

Segment Inputs					Cumulative+MPU Conditions: Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	3,757	2,094	2144.15	72.18	70	59.6595	35.94	E	1195.174	72.18	70	69.9997	17.074	B
Southbound	North of Elkhorn Rd Off-Ramp	3500	2	1.33	3,057	2,184	1744.69	71.3	70	66.5584	26.213	D	1246.533	71.3	70	69.9749	17.814	B
Southbound	North of I-5 Northbound Off-Ramp	0	2	1.63	3,327	2,894	1898.77	70.56	70	64.336	29.513	D	1651.696	70.56	70	67.6333	24.421	C
Southbound	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,454	2,545	1400.59	70.56	70	69.5333	20.143	C	1452.538	70.56	70	69.2602	20.972	C
Northbound	North of Elverta Road Diagonal On-Ramp	5900	2	1.00	1,122	4,830	640.158	72.18	70	66.3643	9.6461	A	2756.421	72.18	70	41.8996	65.786	F
Northbound	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,382	4,370	788.527	71.3	70	68.036	11.59	B	2493.921	71.3	70	50.5789	49.308	F
Northbound	North of I-5 Southbound On-Ramp	-700	2	1.63	2,352	5,280	1342.06	70.56	70	69.7659	19.237	C	3013.215	70.56	70	31.8621	94.57	F
Northbound	South of I-5 Southbound On-Ramp	700	2	1.63	2,000	4,342	1141.19	70.56	70	69.9599	16.312	B	2477.943	70.56	70	51.0556	48.534	F

Univeral Inputs:

PHF	0.92
(P_T)	10%
f_{HV}	0.952380952

Cumulative+MPU Conditions

	Segment Inputs	Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	AM Flow Inputs: Downstream Volume (D)	AM Flow Inputs: Upstream Volume (F)	AM Flow Inputs: Ramp Volume (R)	AM LOS: v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/h)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	2	1	280	2977	2677	300	3398	3056	342	87	1	3056	4800	0	2292	3056	0.708	30.07	D
SB	Elverta Rd Diagonal On-Ramp	2	2	265	3057	2977	80	3489	3398	91	97	1	3398	4800	0	2549	3398	0.727	30.99	D
SB	Elkhorn Boulevard Loop On-Ramp	2	1	235	2857	2077	780	3261	2371	890	68	1	2371	4800	0	1778	2371	0.679	29.03	D
SB	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	3327	2857	470	3798	3261	536	93	1	3261	4800	0	2446	3261	0.791	33.97	D
NB	Elverta Rd Diagonal On-Ramp	2	1	260	1122	892	230	1280	1018	263	29	1	1018	4800	0	763	1018	0.267	13.71	B
NB	Elverta Road Loop On-Ramp	2	1	290	892	802	90	1018	915	103	26	1	915.1	4800	0	686	915	0.212	11.55	B
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1382	1172	210	1577	1337	240	38	1	1337	4800	0	1003	1337	0.329	16.16	B
NB	Elkhorn Boulevard Loop On-Ramp	2	1	255	1172	802	370	1337	915	422	26	1	915.1	4800	0	686	915	0.279	14.11	B
NB	I-5 Southbound On-Ramp	2	1	100	2352	2000	352	2684	2282	402	65	1	2282	4800	0	1712	2282	0.559	25.6	C

	Segment Inputs	PM Flow Inputs: Downstream Volume (D)	PM Flow Inputs: Upstream Volume (F)	PM Flow Inputs: Ramp Volume (R)	PM LOS: v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/hr)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	1884.4	1804	80	2151	2059	91	59	1	2059	4800	0	1545	2059	0.448	20.45	C
SB	Elverta Rd Diagonal On-Ramp	2184.4	1884	300	2493	2151	342	61	1	2151	4800	0	1613	2151	0.519	23.1	C
SB	Elkhorn Boulevard Loop On-Ramp	1674.4	1314	360	1911	1500	411	43	1	1500	4800	0	1125	1500	0.398	18.72	B
SB	Elkhorn Boulevard Diagonal On-Ramp	2894.4	1674	1220	3303	1911	1392	55	1	1911	4800	0	1433	1911	0.688	29.72	D
NB	Elverta Rd Diagonal On-Ramp	4830.3	4580	250	5513	5228	285	149	1	5228	4800	0	3921	5228	1.149	46.71	F
NB	Elverta Road Loop On-Ramp	4580.3	3620	960	5228	4132	1096	118	1	4132	4800	0	3099	4132	1.089	43.93	F
NB	Elkhorn Boulevard Diagonal On-Ramp	4370.3	4120	250	4988	4703	285	134	1	4703	4800	0	3527	4703	1.039	42.74	F
NB	Elkhorn Boulevard Loop On-Ramp	4120.3	3730	390	4703	4257	445	122	1	4257	4800	0	3193	4257	0.98	40.35	E
NB	I-5 Southbound On-Ramp	5280.3	4342	938	6026	4956	1071	142	1	4956	4800	0	3717	4956	1.256	51.36	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

Cumulative+MPU Conditions

		Segment Inputs				AM Flow Inputs														
		Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)	Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	2	1	-	540	2677	3757	1080	-	4288	1233	1	4288	4800	0	3216	4288	0.893	36.27	E
	Elkhorn Rd Off-Ramp	2	1		220	2077	3057	980	-	3489	1118	1	3489	4800	0	2617	3489	0.727	32.28	D
	I-5 Northbound Off-Ramp	2	1		440	2454	3327	873	-	3798	996.4	1	3798	4800	0	2848	3798	0.791	32.95	D
NB	Elverta Road Off-Ramp	2	1		1445	802	1382	580	-	1577	662	1	1577	4800	0	1183	1577	0.329	4.81	A
	Elkhorn Rd Off-Ramp	2	2		255	802	2352	1550	-	2684	1769	1	2684	4800	0	2013	2684	0.559	25.04	C

		PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	1804	2094	290	-	2390	331	1	2390	4800	0	1793	2390	0.498	19.95	B
	Elkhorn Rd Off-Ramp	1314	2184	870	-	2493	992.9	1	2493	4800	0	1870	2493	0.519	23.71	C
	I-5 Northbound Off-Ramp	2545	2894	349	-	3303	398.3	1	3303	4800	0	2478	3303	0.688	28.7	D
NB	Elverta Road Off-Ramp	3620	4370	750	-	4988	856	1	4988	4800	0	3741	4988	1.039	34.14	F
	Elkhorn Rd Off-Ramp	3730	5280	1550	-	6026	1769	1	6026	4800	0	4520	6026	1.256	53.78	F

Univeral Inputs:

Leng 1500 (ft)

S_{FF} 70 (mi/h)

S_{FR} 35 (mi/h)

PHF 0.92

(P_T) 10%

f_{HV} 0.952380952

Segment Inputs					Flow Inputs		Cumulative+Cargo+MPU Conditions: AM LOS Performance Measures						Cumulative+Cargo+MPU Conditions: PM LOS Performance Measures					
		Length (ft)	Number of Lanes (N)	Interchange Density (I/mi)	AM Peak (veh/h)	PM Peak (veh/h)	V_p (pc/h/ln)	FFS (mi/h)		S (mi/h)	D (pc/mi/ln)	LOS	V_p (pc/h/ln)	FFS (mi/h)		S (mi/h)	D (pc/mi/ln)	LOS
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	3,757	2,094	2144.15	72.18	70	59.6595	35.94	E	1195.174	72.18	70	69.9997	17.074	B
Southbound	North of Elkhorn Rd Off-Ramp	3500	2	1.33	3,067	2,184	1750.4	71.3	70	66.4859	26.327	D	1246.533	71.3	70	69.9749	17.814	B
Southbound	North of I-5 Northbound Off-Ramp	0	2	1.63	3,327	2,894	1898.77	70.56	70	64.336	29.513	D	1651.696	70.56	70	67.6333	24.421	C
Southbound	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,454	2,545	1400.59	70.56	70	69.5333	20.143	C	1452.538	70.56	70	69.2602	20.972	C
Northbound	North of Elverta Road Diagonal On-Ramp	5900	2	1.00	1,112	4,820	634.451	72.18	70	66.2898	9.5709	A	2750.715	72.18	70	42.1053	65.329	F
Northbound	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,382	4,370	788.527	71.3	70	68.036	11.59	B	2493.921	71.3	70	50.5789	49.308	F
Northbound	North of I-5 Southbound On-Ramp	-700	2	1.63	2,352	5,280	1342.06	70.56	70	69.7659	19.237	C	3013.215	70.56	70	31.8621	94.57	F
Northbound	South of I-5 Southbound On-Ramp	700	2	1.63	2,000	4,342	1141.19	70.56	70	69.9599	16.312	B	2477.943	70.56	70	51.0556	48.534	F

Univeral Inputs:

PHF 0.92

(P_T) 10%

f_{HV} 0.952380952

Cumulative+Cargo+MPU Conditions

	Segment Inputs				AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/h)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	2	1	280	2987	2687	300	3409	3067	342	88	1	3067	4800	0	2300	3067	0.71	30.16	D
SB	Elverta Rd Diagonal On-Ramp	2	2	265	3067	2987	80	3501	3409	91	97	1	3409	4800	0	2557	3409	0.729	31.08	D
SB	Elkhorn Boulevard Loop On-Ramp	2	1	235	2857	2037	820	3261	2325	936	66	1	2325	4800	0	1744	2325	0.679	29.01	D
SB	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	3327	2857	470	3798	3261	536	93	1	3261	4800	0	2446	3261	0.791	33.97	D
NB	Elverta Rd Diagonal On-Ramp	2	1	260	1112	882	230	1269	1006	263	29	1	1006	4800	0	755	1006	0.264	13.62	B
NB	Elverta Road Loop On-Ramp	2	1	290	882	792	90	1006	904	103	26	1	903.7	4800	0	678	904	0.21	11.46	B
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1382	1172	210	1577	1337	240	38	1	1337	4800	0	1003	1337	0.329	16.16	B
NB	Elkhorn Boulevard Loop On-Ramp	2	1	255	1172	802	370	1337	915	422	26	1	915.1	4800	0	686	915	0.279	14.11	B
NB	I-5 Southbound On-Ramp	2	1	100	2352	2000	352	2684	2282	402	65	1	2282	4800	0	1712	2282	0.559	25.6	C

	Segment Inputs	PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/hr)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	1884.4	1804	80	2151	2059	91	59	1	2059	4800	0	1545	2059	0.448	20.45	C
SB	Elverta Rd Diagonal On-Ramp	2184.4	1884	300	2493	2151	342	61	1	2151	4800	0	1613	2151	0.519	23.1	C
SB	Elkhorn Boulevard Loop On-Ramp	1674.4	1314	360	1911	1500	411	43	1	1500	4800	0	1125	1500	0.398	18.72	B
SB	Elkhorn Boulevard Diagonal On-Ramp	2894.4	1674	1220	3303	1911	1392	55	1	1911	4800	0	1433	1911	0.688	29.72	D
NB	Elverta Rd Diagonal On-Ramp	4820.3	4570	250	5501	5216	285	149	1	5216	4800	0	3912	5216	1.146	46.62	F
NB	Elverta Road Loop On-Ramp	4570.3	3610	960	5216	4120	1096	118	1	4120	4800	0	3090	4120	1.087	43.84	F
NB	Elkhorn Boulevard Diagonal On-Ramp	4370.3	4120	250	4988	4703	285	134	1	4703	4800	0	3527	4703	1.039	42.74	F
NB	Elkhorn Boulevard Loop On-Ramp	4120.3	3730	390	4703	4257	445	122	1	4257	4800	0	3193	4257	0.98	40.35	E
NB	I-5 Southbound On-Ramp	5280.3	4342	938	6026	4956	1071	142	1	4956	4800	0	3717	4956	1.256	51.36	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

						Cumulative+Cargo+MPU Conditions																													
Segment Inputs						AM Flow Inputs															PM Flow Inputs			PM LOS Performance Measures											
		Number of Lanes (N)	Number of Ramp Lanes	L_{EQ} (ft)	Length of Deceleration Lane (L_D) (ft)	Downstream Volume (veh/h)	Upstream Volume (veh/h)	Ramp Volume (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS	Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h/ln)	v_F (pc/h/ln)	v_R (pc/h/ln)	P_{FD}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Off-Ramp	2	1	-	540	2687	3757	1070	-	4288	1221	1	4288	4800	0	3216	4288	0.893	36.27	E	1804	2094	290	-	2390	331	1	2390	4800	0	1793	2390	0.498	19.95	B
	Elkhorn Rd Off-Ramp	2	1		220	2037	3067	1030	-	3501	1176	1	3501	4800	0	2626	3501	0.729	32.38	D	1314	2184	870	-	2493	992.9	1	2493	4800	0	1870	2493	0.519	23.71	C
	I-5 Northbound Off-Ramp	2	1		440	2454	3327	873	-	3798	996.4	1	3798	4800	0	2848	3798	0.791	32.95	D	2545	2894	349	-	3303	398.3	1	3303	4800	0	2478	3303	0.688	28.7	D
NB	Elverta Road Off-Ramp	2	1		1445	792	1382	590	-	1577	673.4	1	1577	4800	0	1183	1577	0.329	4.81	A	3610	4370	760	-	4988	867.4	1	4988	4800	0	3741	4988	1.039	34.14	F
	Elkhorn Rd Off-Ramp	2	2		255	802	2352	1550	-	2684	1769	1	2684	4800	0	2013	2684	0.559	25.04	C	3730	5280	1550	-	6026	1769	1	6026	4800	0	4520	6026	1.256	53.78	F

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

Appendix F

Traffic Signal Warrants Worksheets

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing plus MPU plus Cargo Facility Conditions Shift Change
Intersection: Elverta Rd AND Power Line Rd
Comments:

PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes

2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND — Yes

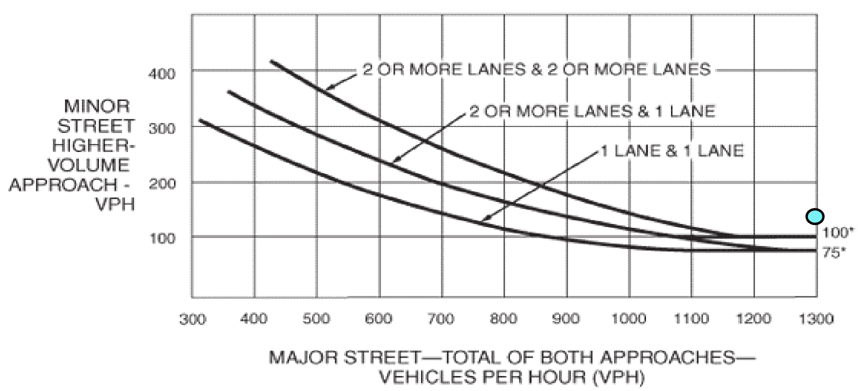
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **YES**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1540	
Highest Approach - Minor Street	120	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative plus MPU plus Cargo Facility Conditions (Cumulative Geometry) Shift Change
Intersection: Elverta Rd AND Earhart Dr
Comments:

PART A or PART B SATISFIED **YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

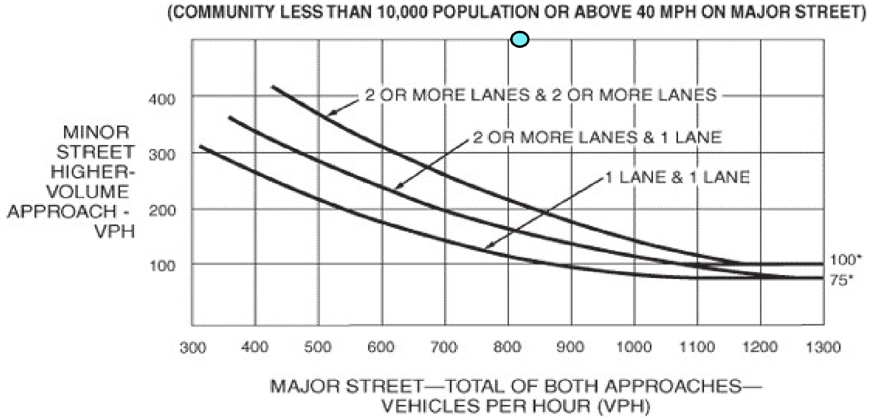
---

PART B SATISFIED **YES**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		810
Highest Approache - Minor Street		760

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative plus MPU plus Cargo Facility Conditions AM
Intersection: Elverta Rd AND Power Line Rd
Comments:

PART A or PART B SATISFIED **NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No

2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND — No

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

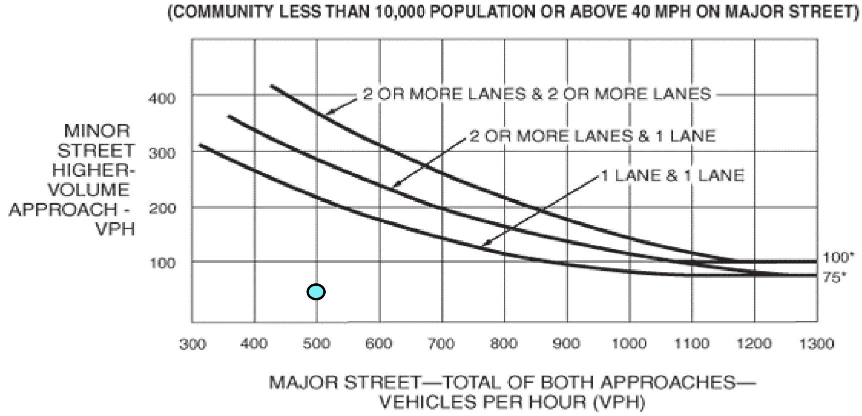
---

PART B SATISFIED **NO**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	500	
Highest Approache - Minor Street	50	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative plus MPU plus Cargo Facility Conditions PM
Intersection: Elverta Rd AND Power Line Rd
Comments:

PART A or PART B SATISFIED **NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No

2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND — Yes

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

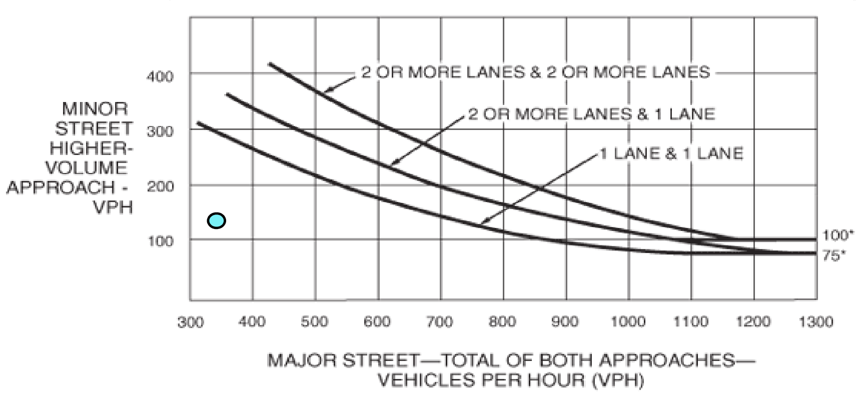
---

PART B SATISFIED **NO**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	340	
Highest Approache - Minor Street	120	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative plus MPU plus Cargo Facility Conditions (Cumulative Geometry) Shift Change
Intersection: Elverta Rd AND Power Line Rd
Comments:

PART A or PART B SATISFIED **YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No

2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND — Yes

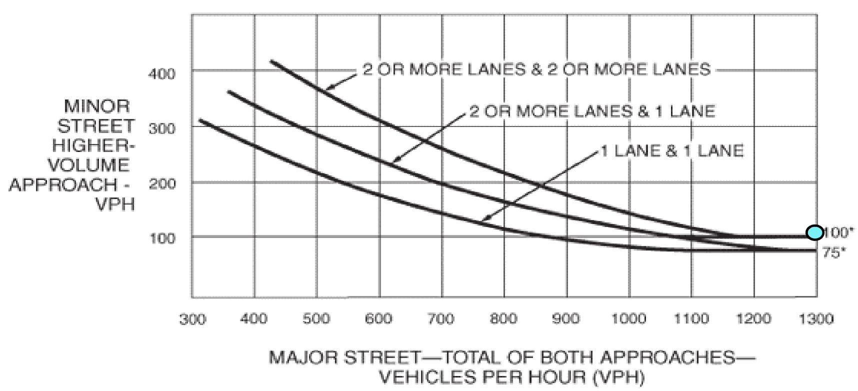
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **YES**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1750	
Highest Approache - Minor Street	100	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix G

Intersection Improvement Analysis Worksheets

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	15	3039	717	73	2007	508
v/c Ratio	0.01	3.03	1.25	0.14	2.69	0.70
Control Delay	10.8	932.3	169.7	20.1	784.1	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	932.3	169.7	20.1	784.1	20.2
Queue Length 50th (ft)	5	~5185	~872	24	~1743	147
Queue Length 95th (ft)	15	#5382	#1122	64	#1875	291
Internal Link Dist (ft)			310		809	
Turn Bay Length (ft)						485
Base Capacity (vph)	1103	1003	573	514	747	722
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	3.03	1.25	0.14	2.69	0.70

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	15	0	3039	0	717	73	13	0	1994
Future Volume (veh/h)	0	0	0	15	0	3039	0	717	73	13	0	1994
Initial Q (Qb), veh				0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach					No			No				No
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870		0	1870
Adj Flow Rate, veh/h				15	0	0	0	717	0		0	1994
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2		0	2
Cap, veh/h				20	0		0	1448			0	2750
Arrive On Green				0.01	0.00	0.00	0.00	0.77	0.00		0.00	0.77
Sat Flow, veh/h				1781	0	1585	0	1870	1585		0	3647
Grp Volume(v), veh/h				15	0	0	0	717	0		0	1994
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1870	1585		0	1777
Q Serve(g_s), s				0.4	0.0	0.0	0.0	6.7	0.0		0.0	13.9
Cycle Q Clear(g_c), s				0.4	0.0	0.0	0.0	6.7	0.0		0.0	13.9
Prop In Lane				1.00		1.00	0.00		1.00		0.00	
Lane Grp Cap(c), veh/h				20	0		0	1448			0	2750
V/C Ratio(X)				0.74	0.00		0.00	0.50			0.00	0.73
Avail Cap(c_a), veh/h				3472	0		0	1801			0	3423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	0.00		0.00	1.00
Uniform Delay (d), s/veh				23.6	0.0	0.0	0.0	2.0	0.0		0.0	2.8
Incr Delay (d2), s/veh				41.1	0.0	0.0	0.0	0.3	0.0		0.0	0.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln				0.4	0.0	0.0	0.0	0.3	0.0		0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				64.8	0.0	0.0	0.0	2.3	0.0		0.0	3.4
LnGrp LOS				E	A		A	A			A	A
Approach Vol, veh/h					15	A		717	A			1994
Approach Delay, s/veh					64.8			2.3				3.4
Approach LOS					E			A				A
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		41.9				41.9		6.0				
Change Period (Y+Rc), s		4.8				4.8		5.5				
Max Green Setting (Gmax), s		46.2				46.2		93.5				
Max Q Clear Time (g_c+I1), s		8.7				15.9		2.4				
Green Ext Time (p_c), s		6.0				21.3		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			3.4									
HCM 6th LOS			A									

Notes

User approved ignoring U-Turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	508
Future Volume (veh/h)	508
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	0
Peak Hour Factor	1.00
Percent Heavy Veh, %	2
Cap, veh/h	
Arrive On Green	0.00
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	
Approach Vol, veh/h	A
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	13	2230	673	60	3195	733
v/c Ratio	0.01	2.56	1.26	0.09	2.41	0.83
Control Delay	18.3	724.5	168.7	11.2	657.0	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	724.5	168.7	11.2	657.0	27.9
Queue Length 50th (ft)	6	~3610	~823	11	~2702	352
Queue Length 95th (ft)	18	#3857	#1068	40	#2798	563
Internal Link Dist (ft)			310		809	
Turn Bay Length (ft)						485
Base Capacity (vph)	902	871	534	690	1328	880
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	2.56	1.26	0.09	2.41	0.83

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	13	0	2230	4	0	669	60	7	0
Future Volume (veh/h)	0	0	0	13	0	2230	4	0	669	60	7	0
Initial Q (Qb), veh				0	0	0		0	0	0		0
Ped-Bike Adj(A_pbT)				1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00		1.00	1.00	1.00		1.00
Work Zone On Approach					No				No			
Adj Sat Flow, veh/h/ln				1870	0	1870		0	1870	1870		0
Adj Flow Rate, veh/h				13	0	0		0	669	0		0
Peak Hour Factor				1.00	1.00	1.00		1.00	1.00	1.00		1.00
Percent Heavy Veh, %				2	0	2		0	2	2		0
Cap, veh/h				17	0			0	1593			0
Arrive On Green				0.01	0.00	0.00		0.00	0.85	0.00		0.00
Sat Flow, veh/h				1781	0	1585		0	1870	1585		0
Grp Volume(v), veh/h				13	0	0		0	669	0		0
Grp Sat Flow(s),veh/h/ln				1781	0	1585		0	1870	1585		0
Q Serve(g_s), s				0.5	0.0	0.0		0.0	6.1	0.0		0.0
Cycle Q Clear(g_c), s				0.5	0.0	0.0		0.0	6.1	0.0		0.0
Prop In Lane				1.00		1.00		0.00		1.00		0.00
Lane Grp Cap(c), veh/h				17	0			0	1593			0
V/C Ratio(X)				0.77	0.00			0.00	0.42			0.00
Avail Cap(c_a), veh/h				1836	0			0	1593			0
HCM Platoon Ratio				1.00	1.00	1.00		1.00	1.00	1.00		1.00
Upstream Filter(I)				1.00	0.00	0.00		0.00	1.00	0.00		0.00
Uniform Delay (d), s/veh				36.7	0.0	0.0		0.0	1.3	0.0		0.0
Incr Delay (d2), s/veh				51.1	0.0	0.0		0.0	0.2	0.0		0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0		0.0	0.0	0.0		0.0
%ile BackOfQ(50%),veh/ln				0.5	0.0	0.0		0.0	0.3	0.0		0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				87.7	0.0	0.0		0.0	1.4	0.0		0.0
LnGrp LOS				F	A			A	A			A
Approach Vol, veh/h					13	A			669	A		
Approach Delay, s/veh					87.7				1.4			
Approach LOS					F				A			
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		68.0				68.0		6.2				
Change Period (Y+Rc), s		4.8				4.8		5.5				
Max Green Setting (Gmax), s		63.2				63.2		76.5				
Max Q Clear Time (g_c+I1), s		8.1				65.2		2.5				
Green Ext Time (p_c), s		5.6				0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			32.0									
HCM 6th LOS			C									

Notes

User approved ignoring U-Turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	3188	733
Future Volume (veh/h)	3188	733
Initial Q (Qb), veh	0	0
Ped-Bike Adj(A_pbT)		1.00
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1870	1870
Adj Flow Rate, veh/h	3188	0
Peak Hour Factor	1.00	1.00
Percent Heavy Veh, %	2	2
Cap, veh/h	3027	
Arrive On Green	0.85	0.00
Sat Flow, veh/h	3647	1585
Grp Volume(v), veh/h	3188	0
Grp Sat Flow(s),veh/h/ln	1777	1585
Q Serve(g_s), s	63.2	0.0
Cycle Q Clear(g_c), s	63.2	0.0
Prop In Lane		1.00
Lane Grp Cap(c), veh/h	3027	
V/C Ratio(X)	1.05	
Avail Cap(c_a), veh/h	3027	
HCM Platoon Ratio	1.00	1.00
Upstream Filter(I)	1.00	0.00
Uniform Delay (d), s/veh	5.5	0.0
Incr Delay (d2), s/veh	32.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.7	0.0
Unsig. Movement Delay, s/veh		
LnGrp Delay(d),s/veh	38.1	0.0
LnGrp LOS	F	
Approach Vol, veh/h	3188	A
Approach Delay, s/veh	38.1	
Approach LOS	D	
Timer - Assigned Phs		

Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Group Flow (vph)	561	585	180	373	2872
v/c Ratio	1.27	1.24	0.08	0.31	2.03
Control Delay	173.7	157.6	7.0	9.0	483.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	173.7	157.6	7.0	9.0	483.2
Queue Length 50th (ft)	~500	~461	22	103	~2943
Queue Length 95th (ft)	#714	#681	34	152	#3192
Internal Link Dist (ft)	382		247	748	
Turn Bay Length (ft)		30			290
Base Capacity (vph)	442	470	2169	1214	1413
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.27	1.24	0.08	0.31	2.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	561	585	10	170	10	363	2872
Future Volume (veh/h)	561	585	10	170	10	363	2872
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	561	585	10	170		363	0
Peak Hour Factor	1.00	1.00	1.00	1.00		1.00	1.00
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	818	728	116	959		532	
Arrive On Green	0.46	0.46	0.28	0.28		0.28	0.00
Sat Flow, veh/h	1781	1585	61	3461		1870	1585
Grp Volume(v), veh/h	561	585	97	83		363	0
Grp Sat Flow(s),veh/h/ln	1781	1585	1820	1617		1870	1585
Q Serve(g_s), s	10.0	12.7	0.0	1.6		6.9	0.0
Cycle Q Clear(g_c), s	10.0	12.7	1.6	1.6		6.9	0.0
Prop In Lane	1.00	1.00	0.10				1.00
Lane Grp Cap(c), veh/h	818	728	616	459		532	
V/C Ratio(X)	0.69	0.80	0.16	0.18		0.68	
Avail Cap(c_a), veh/h	1220	1085	3222	2907		3362	
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	0.00
Uniform Delay (d), s/veh	8.6	9.3	10.9	10.8		12.8	0.0
Incr Delay (d2), s/veh	1.0	2.7	0.1	0.2		1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.5	0.5	0.5		2.5	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	9.6	12.0	11.0	11.0		14.3	0.0
LnGrp LOS	A	B	B	B		B	
Approach Vol, veh/h	1146			180		363	A
Approach Delay, s/veh	10.8			11.0		14.3	
Approach LOS	B			B		B	
Timer - Assigned Phs		2		4		6	
Phs Duration (G+Y+Rc), s		16.2		23.9		16.2	
Change Period (Y+Rc), s		4.8		5.5		4.8	
Max Green Setting (Gmax), s		72.2		27.5		72.2	
Max Q Clear Time (g_c+I1), s		3.6		14.7		8.9	
Green Ext Time (p_c), s		1.1		3.7		2.5	
Intersection Summary							
HCM 6th Ctrl Delay			11.6				
HCM 6th LOS			B				

Notes

User approved ignoring U-Turning movement.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	20	3060	730	100	2000	510
v/c Ratio	0.02	3.05	1.27	0.19	1.83	0.70
Control Delay	10.8	941.7	178.5	20.1	409.6	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	941.7	178.5	20.1	409.6	20.1
Queue Length 50th (ft)	7	~5228	~899	34	~1553	146
Queue Length 95th (ft)	18	#5423	#1148	82	#1685	290
Internal Link Dist (ft)			310		809	
Turn Bay Length (ft)						485
Base Capacity (vph)	1103	1003	573	523	1090	724
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	3.05	1.27	0.19	1.83	0.70

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	20	0	3060	0	730	100	0	2000	510
Future Volume (veh/h)	0	0	0	20	0	3060	0	730	100	0	2000	510
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				20	0	0	0	730	0	0	2000	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				26	0		0	1445		0	2745	
Arrive On Green				0.01	0.00	0.00	0.00	0.77	0.00	0.00	0.77	0.00
Sat Flow, veh/h				1781	0	1585	0	1870	1585	0	3647	1585
Grp Volume(v), veh/h				20	0	0	0	730	0	0	2000	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1870	1585	0	1777	1585
Q Serve(g_s), s				0.5	0.0	0.0	0.0	7.0	0.0	0.0	14.2	0.0
Cycle Q Clear(g_c), s				0.5	0.0	0.0	0.0	7.0	0.0	0.0	14.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				26	0		0	1445		0	2745	
V/C Ratio(X)				0.77	0.00		0.00	0.51		0.00	0.73	
Avail Cap(c_a), veh/h				3445	0		0	1787		0	3396	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.7	0.0	0.0	0.0	2.1	0.0	0.0	2.9	0.0
Incr Delay (d2), s/veh				36.6	0.0	0.0	0.0	0.3	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				60.4	0.0	0.0	0.0	2.3	0.0	0.0	3.5	0.0
LnGrp LOS				E	A		A	A		A	A	
Approach Vol, veh/h					20	A		730	A		2000	A
Approach Delay, s/veh					60.4			2.3			3.5	
Approach LOS					E			A			A	

Timer - Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		42.1				42.1		6.2
Change Period (Y+Rc), s		4.8				4.8		5.5
Max Green Setting (Gmax), s		46.2				46.2		93.5
Max Q Clear Time (g_c+I1), s		9.0				16.2		2.5
Green Ext Time (p_c), s		6.2				21.2		0.0

Intersection Summary	
HCM 6th Ctrl Delay	3.6
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	20	2230	670	80	3170	750
v/c Ratio	0.02	2.21	1.17	0.15	2.91	1.06
Control Delay	10.8	569.1	139.0	18.6	880.9	79.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	569.1	139.0	18.6	880.9	79.5
Queue Length 50th (ft)	7	~3511	~777	24	~2802	~576
Queue Length 95th (ft)	18	#3757	#1023	66	#2900	#831
Internal Link Dist (ft)			310		809	
Turn Bay Length (ft)						485
Base Capacity (vph)	1103	1008	573	519	1090	707
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	2.21	1.17	0.15	2.91	1.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	20	0	2230	0	670	80	0	3170	750
Future Volume (veh/h)	0	0	0	20	0	2230	0	670	80	0	3170	750
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				20	0	0	0	670	0	0	3170	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				25	0		0	1508		0	2864	
Arrive On Green				0.01	0.00	0.00	0.00	0.81	0.00	0.00	0.81	0.00
Sat Flow, veh/h				1781	0	1585	0	1870	1585	0	3647	1585
Grp Volume(v), veh/h				20	0	0	0	670	0	0	3170	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1870	1585	0	1777	1585
Q Serve(g_s), s				0.6	0.0	0.0	0.0	6.2	0.0	0.0	46.2	0.0
Cycle Q Clear(g_c), s				0.6	0.0	0.0	0.0	6.2	0.0	0.0	46.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				25	0		0	1508		0	2864	
V/C Ratio(X)				0.79	0.00		0.00	0.44		0.00	1.11	
Avail Cap(c_a), veh/h				2906	0		0	1508		0	2864	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				28.2	0.0	0.0	0.0	1.7	0.0	0.0	5.6	0.0
Incr Delay (d2), s/veh				39.8	0.0	0.0	0.0	0.2	0.0	0.0	53.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	0.0	0.0	0.0	0.3	0.0	0.0	23.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				68.0	0.0	0.0	0.0	1.9	0.0	0.0	59.4	0.0
LnGrp LOS				E	A		A	A		A	F	
Approach Vol, veh/h					20	A		670	A		3170	A
Approach Delay, s/veh					68.0			1.9			59.4	
Approach LOS					E			A			E	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		51.0				51.0		6.3				
Change Period (Y+Rc), s		4.8				4.8		5.5				
Max Green Setting (Gmax), s		46.2				46.2		93.5				
Max Q Clear Time (g_c+I1), s		8.2				48.2		2.6				
Green Ext Time (p_c), s		5.4				0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			49.5
HCM 6th LOS			D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Group Flow (vph)	570	600	200	370	2860
v/c Ratio	0.92	0.98	0.10	0.34	2.08
Control Delay	65.3	69.5	13.6	16.8	505.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	65.3	69.5	13.6	16.8	505.7
Queue Length 50th (ft)	493	474	42	173	~3695
Queue Length 95th (ft)	#716	#728	61	240	#3915
Internal Link Dist (ft)	382		247	748	
Turn Bay Length (ft)		30			290
Base Capacity (vph)	629	622	1905	1074	1374
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.91	0.96	0.10	0.34	2.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	570	600	10	190	370	2860
Future Volume (veh/h)	570	600	10	190	370	2860
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	570	600	10	190	370	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	851	757	107	957	529	
Arrive On Green	0.48	0.48	0.28	0.28	0.28	0.00
Sat Flow, veh/h	1781	1585	55	3471	1870	1585
Grp Volume(v), veh/h	570	600	108	92	370	0
Grp Sat Flow(s),veh/h/ln	1781	1585	1824	1617	1870	1585
Q Serve(g_s), s	10.6	13.7	0.0	1.9	7.6	0.0
Cycle Q Clear(g_c), s	10.6	13.7	1.9	1.9	7.6	0.0
Prop In Lane	1.00	1.00	0.09			1.00
Lane Grp Cap(c), veh/h	851	757	607	457	529	
V/C Ratio(X)	0.67	0.79	0.18	0.20	0.70	
Avail Cap(c_a), veh/h	2051	1825	3351	3016	3489	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.6	9.4	11.7	11.7	13.8	0.0
Incr Delay (d2), s/veh	0.9	1.9	0.1	0.2	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.6	0.7	0.6	2.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.5	11.4	11.9	11.9	15.5	0.0
LnGrp LOS	A	B	B	B	B	
Approach Vol, veh/h	1170			200	370	A
Approach Delay, s/veh	10.5			11.9	15.5	
Approach LOS	B			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		17.0		26.0		17.0
Change Period (Y+Rc), s		4.8		5.5		4.8
Max Green Setting (Gmax), s		80.2		49.5		80.2
Max Q Clear Time (g_c+I1), s		3.9		15.7		9.6
Green Ext Time (p_c), s		1.3		4.9		2.6

Intersection Summary			
HCM 6th Ctrl Delay			11.7
HCM 6th LOS			B

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	430	370	2380	210	1010	540
v/c Ratio	0.15	0.24	0.82	0.13	0.88	0.35
Control Delay	9.1	0.4	18.3	0.2	36.5	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	0.4	18.3	0.2	36.5	0.6
Queue Length 50th (ft)	36	0	349	0	261	0
Queue Length 95th (ft)	58	0	473	0	340	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	3014	1550	3014	1583	1370	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.79	0.13	0.74	0.35

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	430	370	0	2380	210	1010	0	540	0	0	0
Future Volume (veh/h)	0	430	370	0	2380	210	1010	0	540	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	430	0	0	2380	0	1010	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2919		0	2952		1110	0				
Arrive On Green	0.00	0.57	0.00	0.00	0.58	0.00	0.32	0.00	0.00			
Sat Flow, veh/h	0	5274	1585	0	5274	1585	3456	0	1585			
Grp Volume(v), veh/h	0	430	0	0	2380	0	1010	0	0			
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585	1728	0	1585			
Q Serve(g_s), s	0.0	3.1	0.0	0.0	29.2	0.0	22.3	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	3.1	0.0	0.0	29.2	0.0	22.3	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2919		0	2952		1110	0				
V/C Ratio(X)	0.00	0.15		0.00	0.81		0.91	0.00				
Avail Cap(c_a), veh/h	0	3152		0	3152		1437	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	7.9	0.0	0.0	13.2	0.0	25.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	1.5	0.0	6.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.0	0.0	8.3	0.0	9.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.0	0.0	0.0	14.8	0.0	32.3	0.0	0.0			
LnGrp LOS	A	A		A	B		C	A				
Approach Vol, veh/h		430	A		2380	A		1010	A			
Approach Delay, s/veh		8.0			14.8			32.3				
Approach LOS		A			B			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		49.9				49.9		29.5				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		47.5				* 48		33.5				
Max Q Clear Time (g_c+I1), s		31.2				5.1		24.3				
Green Ext Time (p_c), s		13.1				2.1		1.7				
Intersection Summary												
HCM 6th Ctrl Delay			18.6									
HCM 6th LOS			B									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	100	2450	890	190	1760	550
v/c Ratio	0.09	2.46	1.55	0.35	1.61	0.71
Control Delay	11.6	681.2	292.7	24.5	314.9	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	681.2	292.7	24.5	314.9	16.0
Queue Length 50th (ft)	37	~3993	~1223	80	~1297	109
Queue Length 95th (ft)	63	#4227	#1481	152	#1433	257
Internal Link Dist (ft)			310		809	
Turn Bay Length (ft)						485
Base Capacity (vph)	1103	994	573	543	1090	778
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	2.46	1.55	0.35	1.61	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑↑	↱
Traffic Volume (veh/h)	0	0	0	100	0	2450	0	890	190	0	1760	550
Future Volume (veh/h)	0	0	0	100	0	2450	0	890	190	0	1760	550
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				100	0	0	0	890	0	0	1760	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				135	0		0	1327		0	2522	
Arrive On Green				0.08	0.00	0.00	0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h				1781	0	1585	0	1870	1585	0	3647	1585
Grp Volume(v), veh/h				100	0	0	0	890	0	0	1760	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1870	1585	0	1777	1585
Q Serve(g_s), s				2.6	0.0	0.0	0.0	12.6	0.0	0.0	13.7	0.0
Cycle Q Clear(g_c), s				2.6	0.0	0.0	0.0	12.6	0.0	0.0	13.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				135	0		0	1327		0	2522	
V/C Ratio(X)				0.74	0.00		0.00	0.67		0.00	0.70	
Avail Cap(c_a), veh/h				3472	0		0	1801		0	3423	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				21.7	0.0	0.0	0.0	3.9	0.0	0.0	4.0	0.0
Incr Delay (d2), s/veh				7.8	0.0	0.0	0.0	0.6	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	0.0	0.0	0.0	1.9	0.0	0.0	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29.5	0.0	0.0	0.0	4.5	0.0	0.0	4.4	0.0
LnGrp LOS				C	A		A	A		A	A	
Approach Vol, veh/h					100	A		890	A		1760	A
Approach Delay, s/veh					29.5			4.5			4.4	
Approach LOS					C			A			A	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		38.8				38.8		9.1				
Change Period (Y+Rc), s		4.8				4.8		5.5				
Max Green Setting (Gmax), s		46.2				46.2		93.5				
Max Q Clear Time (g_c+I1), s		14.6				15.7		4.6				
Green Ext Time (p_c), s		8.3				18.4		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	5.3
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Group Flow (vph)	760	80	340	100	1710
v/c Ratio	1.22	0.14	0.17	0.09	1.25
Control Delay	150.6	28.1	14.4	13.8	130.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	150.6	28.1	14.4	13.8	130.6
Queue Length 50th (ft)	~845	44	74	40	~1490
Queue Length 95th (ft)	#1092	84	100	68	#1759
Internal Link Dist (ft)	382		247	748	
Turn Bay Length (ft)		30			290
Base Capacity (vph)	625	565	2027	1067	1372
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.22	0.14	0.17	0.09	1.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	760	80	0	340	100	1710
Future Volume (veh/h)	760	80	0	340	100	1710
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	760	80	0	340	100	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	909	808	0	738	388	
Arrive On Green	0.51	0.51	0.00	0.21	0.21	0.00
Sat Flow, veh/h	1781	1585	0	3741	1870	1585
Grp Volume(v), veh/h	760	80	0	340	100	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1777	1870	1585
Q Serve(g_s), s	13.3	0.9	0.0	3.1	1.6	0.0
Cycle Q Clear(g_c), s	13.3	0.9	0.0	3.1	1.6	0.0
Prop In Lane	1.00	1.00	0.00			1.00
Lane Grp Cap(c), veh/h	909	808	0	738	388	
V/C Ratio(X)	0.84	0.10	0.00	0.46	0.26	
Avail Cap(c_a), veh/h	2418	2151	0	7815	4113	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.6	4.6	0.0	12.7	12.1	0.0
Incr Delay (d2), s/veh	2.1	0.1	0.0	0.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.2	0.0	1.0	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.8	4.7	0.0	13.1	12.4	0.0
LnGrp LOS	A	A	A	B	B	
Approach Vol, veh/h	840			340	100	A
Approach Delay, s/veh	9.3			13.1	12.4	
Approach LOS	A			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		12.4		24.1		12.4
Change Period (Y+Rc), s		4.8		5.5		4.8
Max Green Setting (Gmax), s		80.2		49.5		80.2
Max Q Clear Time (g_c+I1), s		5.1		15.3		3.6
Green Ext Time (p_c), s		2.5		3.3		0.6

Intersection Summary			
HCM 6th Ctrl Delay			10.5
HCM 6th LOS			B

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	50	2130	790	100	2980	780
v/c Ratio	0.06	2.50	1.01	0.14	2.00	0.86
Control Delay	18.8	699.5	76.8	12.6	477.7	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	699.5	76.8	12.6	477.7	28.0
Queue Length 50th (ft)	24	~3446	~779	24	~2385	364
Queue Length 95th (ft)	48	#3697	#1060	63	#2490	593
Internal Link Dist (ft)			310		809	
Turn Bay Length (ft)						485
Base Capacity (vph)	902	851	784	700	1491	910
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	2.50	1.01	0.14	2.00	0.86

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	50	0	2130	0	790	100	0	2980	780
Future Volume (veh/h)	0	0	0	50	0	2130	0	790	100	0	2980	780
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				50	0	0	0	790	0	0	2980	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				65	0		0	1550		0	2944	
Arrive On Green				0.04	0.00	0.00	0.00	0.83	0.00	0.00	0.83	0.00
Sat Flow, veh/h				1781	0	1585	0	1870	1585	0	3647	1585
Grp Volume(v), veh/h				50	0	0	0	790	0	0	2980	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1870	1585	0	1777	1585
Q Serve(g_s), s				2.1	0.0	0.0	0.0	9.6	0.0	0.0	63.2	0.0
Cycle Q Clear(g_c), s				2.1	0.0	0.0	0.0	9.6	0.0	0.0	63.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				65	0		0	1550		0	2944	
V/C Ratio(X)				0.77	0.00		0.00	0.51		0.00	1.01	
Avail Cap(c_a), veh/h				1786	0		0	1550		0	2944	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				36.4	0.0	0.0	0.0	1.9	0.0	0.0	6.5	0.0
Incr Delay (d2), s/veh				17.1	0.0	0.0	0.0	0.3	0.0	0.0	19.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.2	0.0	0.0	0.0	1.1	0.0	0.0	14.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				53.5	0.0	0.0	0.0	2.2	0.0	0.0	26.2	0.0
LnGrp LOS				D	A		A	A		A	F	
Approach Vol, veh/h					50	A		790	A		2980	A
Approach Delay, s/veh					53.5			2.2			26.2	
Approach LOS					D			A			C	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		68.0				68.0		8.3				
Change Period (Y+Rc), s		4.8				4.8		5.5				
Max Green Setting (Gmax), s		63.2				63.2		76.5				
Max Q Clear Time (g_c+I1), s		11.6				65.2		4.1				
Green Ext Time (p_c), s		7.3				0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Group Flow (vph)	680	690	250	510	2560
v/c Ratio	1.54	1.47	0.12	0.42	1.81
Control Delay	284.5	252.9	7.2	10.2	384.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	284.5	252.9	7.2	10.2	384.2
Queue Length 50th (ft)	~676	~622	31	155	~2474
Queue Length 95th (ft)	#901	#851	46	221	#2732
Internal Link Dist (ft)	382		247	748	
Turn Bay Length (ft)		30			290
Base Capacity (vph)	442	468	2171	1222	1413
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.54	1.47	0.12	0.42	1.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	680	690	10	240	510	2560
Future Volume (veh/h)	680	690	10	240	510	2560
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	680	690	10	240	510	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	837	745	82	1163	650	
Arrive On Green	0.47	0.47	0.35	0.35	0.35	0.00
Sat Flow, veh/h	1781	1585	39	3430	1870	1585
Grp Volume(v), veh/h	680	690	133	117	510	0
Grp Sat Flow(s),veh/h/ln	1781	1585	1767	1617	1870	1585
Q Serve(g_s), s	18.5	23.0	0.1	2.9	13.8	0.0
Cycle Q Clear(g_c), s	18.5	23.0	13.8	2.9	13.8	0.0
Prop In Lane	1.00	1.00	0.08			1.00
Lane Grp Cap(c), veh/h	837	745	683	562	650	
V/C Ratio(X)	0.81	0.93	0.19	0.21	0.78	
Avail Cap(c_a), veh/h	869	773	2295	2071	2396	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.8	14.0	12.9	12.9	16.5	0.0
Incr Delay (d2), s/veh	5.8	16.8	0.1	0.2	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	10.1	1.1	1.0	5.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.6	30.9	13.1	13.1	18.6	0.0
LnGrp LOS	B	C	B	B	B	
Approach Vol, veh/h	1370			250	510	A
Approach Delay, s/veh	24.8			13.1	18.6	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		24.4		32.0		24.4
Change Period (Y+Rc), s		4.8		5.5		4.8
Max Green Setting (Gmax), s		72.2		27.5		72.2
Max Q Clear Time (g_c+I1), s		15.8		25.0		15.8
Green Ext Time (p_c), s		1.6		1.4		3.8

Intersection Summary			
HCM 6th Ctrl Delay			21.9
HCM 6th LOS			C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	430	370	2380	210	1010	540
v/c Ratio	0.15	0.24	0.82	0.13	0.88	0.35
Control Delay	9.1	0.4	18.3	0.2	36.5	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	0.4	18.3	0.2	36.5	0.6
Queue Length 50th (ft)	36	0	349	0	261	0
Queue Length 95th (ft)	58	0	473	0	340	0
Internal Link Dist (ft)	937		1907			
Turn Bay Length (ft)		136		150	470	
Base Capacity (vph)	3014	1550	3014	1583	1370	1563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.79	0.13	0.74	0.35

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	430	370	0	2380	210	1010	0	540	0	0	0
Future Volume (veh/h)	0	430	370	0	2380	210	1010	0	540	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	0	430	0	0	2380	0	1010	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2			
Cap, veh/h	0	2919		0	2952		1110	0				
Arrive On Green	0.00	0.57	0.00	0.00	0.58	0.00	0.32	0.00	0.00			
Sat Flow, veh/h	0	5274	1585	0	5274	1585	3456	0	1585			
Grp Volume(v), veh/h	0	430	0	0	2380	0	1010	0	0			
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1702	1585	1728	0	1585			
Q Serve(g_s), s	0.0	3.1	0.0	0.0	29.2	0.0	22.3	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	3.1	0.0	0.0	29.2	0.0	22.3	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2919		0	2952		1110	0				
V/C Ratio(X)	0.00	0.15		0.00	0.81		0.91	0.00				
Avail Cap(c_a), veh/h	0	3152		0	3152		1437	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	7.9	0.0	0.0	13.2	0.0	25.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	1.5	0.0	6.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.0	0.0	8.3	0.0	9.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.0	0.0	0.0	14.8	0.0	32.3	0.0	0.0			
LnGrp LOS	A	A		A	B		C	A				
Approach Vol, veh/h		430	A		2380	A		1010	A			
Approach Delay, s/veh		8.0			14.8			32.3				
Approach LOS		A			B			C				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		49.9				49.9		29.5				
Change Period (Y+Rc), s		5.5				* 5.5		3.5				
Max Green Setting (Gmax), s		47.5				* 48		33.5				
Max Q Clear Time (g_c+I1), s		31.2				5.1		24.3				
Green Ext Time (p_c), s		13.1				2.1		1.7				

Intersection Summary			
HCM 6th Ctrl Delay			18.6
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	90	2450	890	190	1760	550
v/c Ratio	0.08	2.46	1.55	0.35	1.61	0.71
Control Delay	11.5	681.2	292.7	24.5	314.9	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	681.2	292.7	24.5	314.9	16.0
Queue Length 50th (ft)	33	~3993	~1223	80	~1297	109
Queue Length 95th (ft)	57	#4227	#1481	152	#1433	257
Internal Link Dist (ft)			310		809	
Turn Bay Length (ft)						485
Base Capacity (vph)	1103	994	573	543	1090	778
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	2.46	1.55	0.35	1.61	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	90	0	2450	0	890	190	0	1760	550
Future Volume (veh/h)	0	0	0	90	0	2450	0	890	190	0	1760	550
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				90	0	0	0	890	0	0	1760	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				120	0		0	1336		0	2539	
Arrive On Green				0.07	0.00	0.00	0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h				1781	0	1585	0	1870	1585	0	3647	1585
Grp Volume(v), veh/h				90	0	0	0	890	0	0	1760	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1870	1585	0	1777	1585
Q Serve(g_s), s				2.3	0.0	0.0	0.0	12.3	0.0	0.0	13.2	0.0
Cycle Q Clear(g_c), s				2.3	0.0	0.0	0.0	12.3	0.0	0.0	13.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				120	0		0	1336		0	2539	
V/C Ratio(X)				0.75	0.00		0.00	0.67		0.00	0.69	
Avail Cap(c_a), veh/h				3524	0		0	1828		0	3474	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				21.6	0.0	0.0	0.0	3.7	0.0	0.0	3.8	0.0
Incr Delay (d2), s/veh				8.9	0.0	0.0	0.0	0.6	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.2	0.0	0.0	0.0	1.7	0.0	0.0	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				30.5	0.0	0.0	0.0	4.3	0.0	0.0	4.2	0.0
LnGrp LOS				C	A		A	A		A	A	
Approach Vol, veh/h					90	A		890	A		1760	A
Approach Delay, s/veh					30.5			4.3			4.2	
Approach LOS					C			A			A	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		38.6				38.6		8.7				
Change Period (Y+Rc), s		4.8				4.8		5.5				
Max Green Setting (Gmax), s		46.2				46.2		93.5				
Max Q Clear Time (g_c+I1), s		14.3				15.2		4.3				
Green Ext Time (p_c), s		8.3				18.5		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Group Flow (vph)	760	100	350	110	1710
v/c Ratio	1.22	0.18	0.17	0.10	1.25
Control Delay	150.6	28.4	14.5	13.9	130.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	150.6	28.4	14.5	13.9	130.6
Queue Length 50th (ft)	~845	55	76	44	~1490
Queue Length 95th (ft)	#1092	100	102	73	#1759
Internal Link Dist (ft)	382		247	748	
Turn Bay Length (ft)		30			290
Base Capacity (vph)	625	567	2027	1067	1372
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.22	0.18	0.17	0.10	1.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	760	100	0	350	110	1710
Future Volume (veh/h)	760	100	0	350	110	1710
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	760	100	0	350	110	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	908	808	0	741	390	
Arrive On Green	0.51	0.51	0.00	0.21	0.21	0.00
Sat Flow, veh/h	1781	1585	0	3741	1870	1585
Grp Volume(v), veh/h	760	100	0	350	110	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1777	1870	1585
Q Serve(g_s), s	13.3	1.2	0.0	3.2	1.8	0.0
Cycle Q Clear(g_c), s	13.3	1.2	0.0	3.2	1.8	0.0
Prop In Lane	1.00	1.00	0.00			1.00
Lane Grp Cap(c), veh/h	908	808	0	741	390	
V/C Ratio(X)	0.84	0.12	0.00	0.47	0.28	
Avail Cap(c_a), veh/h	2412	2146	0	7797	4104	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.7	4.7	0.0	12.7	12.2	0.0
Incr Delay (d2), s/veh	2.1	0.1	0.0	0.5	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.2	0.0	1.0	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.8	4.8	0.0	13.2	12.6	0.0
LnGrp LOS	A	A	A	B	B	
Approach Vol, veh/h	860			350	110	A
Approach Delay, s/veh	9.2			13.2	12.6	
Approach LOS	A			B	B	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		12.4		24.1		12.4
Change Period (Y+Rc), s		4.8		5.5		4.8
Max Green Setting (Gmax), s		80.2		49.5		80.2
Max Q Clear Time (g_c+I1), s		5.2		15.3		3.8
Green Ext Time (p_c), s		2.5		3.3		0.6
Intersection Summary						
HCM 6th Ctrl Delay			10.5			
HCM 6th LOS			B			

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	50	2130	790	110	3000	780
v/c Ratio	0.06	2.50	1.01	0.16	2.01	0.86
Control Delay	18.8	699.5	76.8	12.5	483.5	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	699.5	76.8	12.5	483.5	28.3
Queue Length 50th (ft)	24	~3446	~779	27	~2406	367
Queue Length 95th (ft)	48	#3697	#1060	68	#2510	597
Internal Link Dist (ft)			310		809	
Turn Bay Length (ft)						485
Base Capacity (vph)	902	851	784	704	1491	908
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	2.50	1.01	0.16	2.01	0.86

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	50	0	2130	0	790	110	0	3000	780
Future Volume (veh/h)	0	0	0	50	0	2130	0	790	110	0	3000	780
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				50	0	0	0	790	0	0	3000	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				65	0		0	1550		0	2944	
Arrive On Green				0.04	0.00	0.00	0.00	0.83	0.00	0.00	0.83	0.00
Sat Flow, veh/h				1781	0	1585	0	1870	1585	0	3647	1585
Grp Volume(v), veh/h				50	0	0	0	790	0	0	3000	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1870	1585	0	1777	1585
Q Serve(g_s), s				2.1	0.0	0.0	0.0	9.6	0.0	0.0	63.2	0.0
Cycle Q Clear(g_c), s				2.1	0.0	0.0	0.0	9.6	0.0	0.0	63.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				65	0		0	1550		0	2944	
V/C Ratio(X)				0.77	0.00		0.00	0.51		0.00	1.02	
Avail Cap(c_a), veh/h				1786	0		0	1550		0	2944	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				36.4	0.0	0.0	0.0	1.9	0.0	0.0	6.5	0.0
Incr Delay (d2), s/veh				17.1	0.0	0.0	0.0	0.3	0.0	0.0	21.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.2	0.0	0.0	0.0	1.1	0.0	0.0	15.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				53.5	0.0	0.0	0.0	2.2	0.0	0.0	28.1	0.0
LnGrp LOS				D	A		A	A		A	F	
Approach Vol, veh/h					50	A		790	A		3000	A
Approach Delay, s/veh					53.5			2.2			28.1	
Approach LOS					D			A			C	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		68.0				68.0		8.3				
Change Period (Y+Rc), s		4.8				4.8		5.5				
Max Green Setting (Gmax), s		63.2				63.2		76.5				
Max Q Clear Time (g_c+I1), s		11.6				65.2		4.1				
Green Ext Time (p_c), s		7.3				0.0		0.1				

Intersection Summary			
HCM 6th Ctrl Delay			23.1
HCM 6th LOS			C

Notes
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Group Flow (vph)	690	700	260	510	2570
v/c Ratio	1.56	1.50	0.12	0.42	1.82
Control Delay	294.1	262.0	7.2	10.2	387.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	294.1	262.0	7.2	10.2	387.4
Queue Length 50th (ft)	~690	~637	32	155	~2489
Queue Length 95th (ft)	#916	#868	48	221	#2747
Internal Link Dist (ft)	382		247	748	
Turn Bay Length (ft)		30			290
Base Capacity (vph)	442	468	2174	1222	1413
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.56	1.50	0.12	0.42	1.82

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	690	700	10	250	510	2570
Future Volume (veh/h)	690	700	10	250	510	2570
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	690	700	10	250	510	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	841	748	81	1166	649	
Arrive On Green	0.47	0.47	0.35	0.35	0.35	0.00
Sat Flow, veh/h	1781	1585	37	3448	1870	1585
Grp Volume(v), veh/h	690	700	138	122	510	0
Grp Sat Flow(s),veh/h/ln	1781	1585	1782	1617	1870	1585
Q Serve(g_s), s	19.0	23.7	0.0	3.0	13.9	0.0
Cycle Q Clear(g_c), s	19.0	23.7	14.0	3.0	13.9	0.0
Prop In Lane	1.00	1.00	0.07			1.00
Lane Grp Cap(c), veh/h	841	748	686	561	649	
V/C Ratio(X)	0.82	0.94	0.20	0.22	0.79	
Avail Cap(c_a), veh/h	862	767	2286	2054	2376	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.9	14.2	13.1	13.1	16.7	0.0
Incr Delay (d2), s/veh	6.3	18.5	0.1	0.2	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	10.7	1.1	1.0	5.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.2	32.7	13.2	13.3	18.8	0.0
LnGrp LOS	B	C	B	B	B	
Approach Vol, veh/h	1390			260	510	A
Approach Delay, s/veh	26.0			13.3	18.8	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		24.5		32.3		24.5
Change Period (Y+Rc), s		4.8		5.5		4.8
Max Green Setting (Gmax), s		72.2		27.5		72.2
Max Q Clear Time (g_c+I1), s		16.0		25.7		15.9
Green Ext Time (p_c), s		1.7		1.1		3.8

Intersection Summary			
HCM 6th Ctrl Delay			22.8
HCM 6th LOS			C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix H

Freeway Improvement Analysis Worksheets

Segment Inputs					Improved Cumulative Plus MPU Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	3	1.50	3,062	4,463	1198.11	70.87	70	70	17.116	B	1746.261	70.87	70	66.5385	26.244	D
	North of Metro Parkway Off-Ramp	3300	2	2.00	2,082	3,133	1221.95	69.64	70	69.9944	17.458	B	1838.739	69.64	70	65.2673	28.172	D
	North of SR-99 Northbound Off-Ramp	Analyzed as a weaving segment																
	North of SR-99 Southbound On-Ramp	2100	2	2.17	2,207	3,625	1295.43	69.24	70	69.8944	18.534	C	2127.522	69.24	70	60.0206	35.447	E
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	1.33	719	2,712	422.305	71.3	70	62.9842	6.7049	A	1591.562	71.3	70	68.2215	23.329	C
	North of Metro Parkway Diagonal On-Ramp	1700	2	2.00	2,649	4,012	1555.13	69.64	70	68.537	22.69	C	2354.605	69.64	70	54.5359	43.175	E
	North of SR-99 Southbound On-Ramp	2400	2	2.33	3,489	3,042	2048.18	68.84	70	61.655	33.22	D	1785.258	68.84	70	66.0267	27.038	D
	North of SR-99 Northbound Off-Ramp	0	2	2.33	2,616	2,693	1535.76	68.84	70	68.6923	22.357	C	1580.41	68.84	70	68.3213	23.132	C

Univeral Inputs:

PHF 0.92

(P_T) 16%

f_{HV} 0.925925926

					Improved Cumulative Plus MPU Conditions																																	
Segment Inputs					AM Flow Inputs			AM LOS Performance Measures														PM Flow Inputs			PM LOS Performance Measures													
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	3	1	1238	5502	3792	1710	6459	4451	2007	127	0.612	2725	7200	863	2044	2725	0.897	33.7	D	8253	5693	2560	9688	6683	3005	191	0.612	4091	7200	1296	3068	4091	1.346	51.68	F
SB	Metro Pkwy Loop On-Ramp	2	1	900	2642	1462	1180	3101	1716	1385	49	1	1716	4800	0	1287	1716	0.646	23.38	C	4553	2403	2150	5344	2821	2524	81	1	2821	4800	0	2115	2821	1.113	40.36	F
SB	Metro Pkwy Diagonal On-Ramp	2	1	1200	2652	2642	10	3113	3101	12	89	1	3101	4800	0	2326	3101	0.649	22.23	C	4563	4553	10	5356	5344	12	153	1	5344	4800	0	4008	5344	1.116	39.72	F
NB	Airport Blvd Diagonal On-Ramp	2	1	210	719	179	540	845	211	634	6	1	210.7	4800	0	158	211	0.176	10.45	B	2712	1982	730	3183	2326	857	66	1	2326	4800	0	1745	2326	0.663	28.59	D
NB	Airport Blvd Loop On-Ramp	2	1	235	179	99	80	211	117	94	3	1	116.8	4800	0	88	117	0.044	5.602	A	1982	1922	60	2326	2256	70	64	1	2256	4800	0	1692	2256	0.485	22.11	C
NB	Metro Pkwy Diagonal On-Ramp	2	1	800	2649	1469	1180	3110	1725	1385	49	1	1725	4800	0	1294	1725	0.648	24.08	C	4012	1862	2150	4709	2185	2524	62	1	2185	4800	0	1639	2185	0.981	36.03	E
NB	Metro Pkwy Loop On-Ramp	2	1	600	1469	1459	10	1725	1713	12	49	1	1713	4800	0	1285	1713	0.359	15.16	B	1862	1852	10	2185	2174	12	62	1	2174	4800	0	1630	2174	0.455	18.75	B

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

		Segment Inputs				AM Flow Inputs			Improved Cumulative Plus MPU Conditions												PM Flow Inputs			PM LOS Performance Measures											
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	3	1	-	315	2332	3062	730	-	3594	857	0.631	2583	7200	505	1938	2583	0.499	23.63	C	3233	4463	1230	-	5239	1444	0.563	3579	7200	830	2684	3579	0.728	32.2	D
	Metro Pkwy Off-Ramp	2	1		500	1462	2082	620	-	2444	727.8	1	2444	4800	0	1833	2444	0.509	20.77	C	2403	3133	730	-	3677	857	1	3677	4800	0	2758	3677	0.766	31.38	D
NB	Airport Blvd Off-Ramp	2	1		1770	99	2649	2550	-	3110	2993	1	3110	4800	0	2333	3110	0.648	15.07	B	1922	4012	2090	-	4709	2453	1	4709	4800	0	3532	4709	0.981	28.82	D
	Metro Pkwy Off-Ramp	2	2		200	1459	3489	2030	-	4096	2383	1	4096	4800	0	3072	4096	0.853	37.68	E	1852	3042	1190	-	3571	1397	1	3571	4800	0	2678	3571	0.744	33.16	D

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

					Improved Cumulative Plus Cargo Plus MPU Conditions													
Segment Inputs					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Airport Blvd Off-Ramp	600	3	1.50	3,072	4,483	1202.03	70.87	70	70	17.172	B	1754.087	70.87	70	66.4387	26.402	D
Southbound	North of Metro Parkway Off-Ramp	3300	2	2.00	2,082	3,133	1221.95	69.64	70	69.9944	17.458	B	1838.739	69.64	70	65.2673	28.172	D
Southbound	North of SR-99 Northbound Off-Ramp	Analyzed as a weaving segment																
Southbound	North of SR-99 Southbound On-Ramp	2100	2	2.17	2,317	3,675	1360	69.24	70	69.703	19.511	C	2156.87	69.24	70	59.379	36.324	E
Northbound	North of Airport Blvd Diagonal On-Ramp	8100	2	1.33	809	2,772	475.132	71.3	70	63.905	7.435	A	1626.779	71.3	70	67.8872	23.963	C
Northbound	North of Metro Parkway Diagonal On-Ramp	1700	2	2.00	2,769	4,082	1625.57	69.64	70	67.8992	23.941	C	2395.692	69.64	70	53.4157	44.85	E
Northbound	North of SR-99 Southbound On-Ramp	2400	2	2.33	3,489	3,042	2048.18	68.84	70	61.655	33.22	D	1785.258	68.84	70	66.0267	27.038	D
Northbound	North of SR-99 Northbound Off-Ramp	0	2	2.33	2,616	2,693	1535.76	68.84	70	68.6923	22.357	C	1580.41	68.84	70	68.3213	23.132	C

Univeral Inputs:

PHF 0.92

(P_T) 16%

f_{HV} 0.925925926

Improved Cumulative Plus Cargo Plus MPU Conditions

Segment Inputs					AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	3	1	1500	5502	3792	1710	6459	4451	2007	127	0.62	2758	7200	847	2068	2758	0.897	32.31	D
SB	Metro Pkwy Loop On-Ramp	2	1	900	2752	1462	1290	3230	1716	1514	49	1	1716	4800	0	1287	1716	0.673	24.33	C
SB	Metro Pkwy Diagonal On-Ramp	2	1	1200	2762	2752	10	3242	3230	12	92	1	3230	4800	0	2423	3230	0.675	23.23	C
NB	Airport Blvd Diagonal On-Ramp	2	1	210	809	309	500	950	363	587	10	1	363.3	4800	0	272	363	0.198	11.3	B
NB	Airport Blvd Loop On-Ramp	2	1	235	309	229	80	363	269	94	8	1	269.4	4800	0	202	269	0.076	6.792	A
NB	Metro Pkwy Diagonal On-Ramp	2	1	800	2769	1479	1290	3251	1737	1514	50	1	1737	4800	0	1303	1737	0.677	25.12	C
NB	Metro Pkwy Loop On-Ramp	2	1	600	1479	1469	10	1737	1725	12	49	1	1725	4800	0	1294	1725	0.362	15.25	B

Segment Inputs		PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
SB	Airport Blvd Loop On-Ramp	8273	5703	2570	9711	6694	3017	191	0.62	4147	7200	1274	3110	4147	1.349	50.56	F
SB	Metro Pkwy Loop On-Ramp	4603	2443	2160	5403	2867	2536	82	1	2867	4800	0	2151	2867	1.126	40.81	F
SB	Metro Pkwy Diagonal On-Ramp	4613	4603	10	5415	5403	12	154	1	5403	4800	0	4052	5403	1.128	40.18	F
NB	Airport Blvd Diagonal On-Ramp	2772	2062	710	3254	2420	833	69	1	2420	4800	0	1815	2420	0.678	29.15	D
NB	Airport Blvd Loop On-Ramp	2062	1992	70	2420	2338	82	67	1	2338	4800	0	1753	2338	0.504	22.84	C
NB	Metro Pkwy Diagonal On-Ramp	4082	1922	2160	4791	2256	2536	64	1	2256	4800	0	1692	2256	0.998	36.67	E
NB	Metro Pkwy Loop On-Ramp	1922	1912	10	2256	2244	12	64	1	2244	4800	0	1683	2244	0.47	19.3	B

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Improved Cumulative Plus Cargo Plus MPU Conditions

	Segment Inputs					AM Flow Inputs														
		Number of Lanes	Number of Ramp Lanes	L_{EQ}	Length of Deceleration Lane (L_D)	Downstream Volume	Upstream Volume	Ramp Volume	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	3	1	-	315	2352	3072	720	-	3606	845.2	0.631	2587	7200	509	1940	2587	0.501	23.67	C
SB	Metro Pkwy Off-Ramp	2	1		500	1462	2082	620	-	2444	727.8	1	2444	4800	0	1833	2444	0.509	20.77	C
NB	Airport Blvd Off-Ramp	2	1		1770	229	2769	2540	-	3251	2982	1	3251	4800	0	2438	3251	0.677	16.28	B
NB	Metro Pkwy Off-Ramp	2	2		200	1469	3489	2020	-	4096	2371	1	4096	4800	0	3072	4096	0.853	37.68	E

		PM Flow Inputs			PM LOS Performance Measures											
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	P_{FD}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h/ln)	(pc/h/ln)	(pc/h/ln)		(pc/h/ln)						(pc/mi/ln)	
SB	Airport Blvd Off-Ramp	3263	4483	1220	-	5262	1432	0.563	3587	7200	838	2690	3587	0.731	32.26	D
SB	Metro Pkwy Off-Ramp	2443	3133	690	-	3677	810	1	3677	4800	0	2758	3677	0.766	31.38	D
NB	Airport Blvd Off-Ramp	1992	4082	2090	-	4791	2453	1	4791	4800	0	3594	4791	0.998	29.53	D
NB	Metro Pkwy Off-Ramp	1912	3042	1130	-	3571	1327	1	3571	4800	0	2678	3571	0.744	33.16	D

Univeral Inputs:

Leng	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	16%	
f_{HV}	0.925925926	

Segment Inputs					Improved Cumulative+MPU Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	3,757	2,094	2144.15	72.18	70	59.6595	35.94	E	1195.174	72.18	70	69.9997	17.074	B
Southbound	North of Elkhorn Rd Off-Ramp	3500	2	1.33	3,237	2,094	1847.41	71.3	70	65.138	28.361	D	1195.174	71.3	70	69.9997	17.074	B
Southbound	North of I-5 Northbound Off-Ramp	0	3	1.63	3,747	2,154	1425.63	70.56	70	69.4095	20.539	C	819.6087	70.56	70	68.3215	11.996	B
Southbound	South of I-5 Northbound Off-Ramp	1300	2	1.63	2,874	1,805	1640.26	70.56	70	67.7515	24.21	C	1030.255	70.56	70	69.6658	14.789	B
Northbound	North of Elverta Road Diagonal On-Ramp	5900	3	1.00	1,862	4,370	708.293	72.18	70	67.1954	10.541	A	1662.614	72.18	70	67.5175	24.625	C
Northbound	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,982	4,420	1130.92	71.3	70	69.9446	16.169	B	2522.454	71.3	70	49.7129	50.74	F
Northbound	North of I-5 Southbound On-Ramp	-700	2	1.63	2,352	5,280	1342.06	70.56	70	69.7659	19.237	C	3013.215	70.56	70	31.8621	94.57	F
Northbound	South of I-5 Southbound On-Ramp	700	2	1.63	2,000	4,342	1141.19	70.56	70	69.9599	16.312	B	2477.943	70.56	70	51.0556	48.534	F

Univeral Inputs:

PHF	0.92
(P_T)	10%
f_{HV}	0.952380952

Improved Cumulative+MPU Conditions

	Segment Inputs				AM Flow Inputs			AM LOS Performance Measures												
		Number of Lanes	Number of Ramp Lanes	Length of Acceleration Lane (L_A)	Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(N)		(ft)	(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/h)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	2	1	280	3217	2917	300	3672	3330	342	95	1	3330	4800	0	2497	3330	0.765	32.2	D
SB	Elverta Rd Diagonal On-Ramp	2	2	265	3237	3217	20	3695	3672	23	105	1	3672	4800	0	2754	3672	0.77	32.62	D
SB	Elkhorn Boulevard Loop On-Ramp	2	1	235	3577	2797	780	4083	3193	890	91	1	3193	4800	0	2394	3193	0.851	35.44	E
SB	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	3747	3577	170	4277	4083	194	117	1	4083	4800	0	3062	4083	0.891	37.87	E
NB	Elverta Rd Diagonal On-Ramp	3	1	260	1862	1772	90	2125	2022	103	58	0.585	1183	7200	420	887	1183	0.295	13.82	B
NB	Elverta Road Loop On-Ramp	3	1	290	1772	1762	10	2022	2011	11	57	0.586	1178	7200	417	883	1178	0.281	12.93	B
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1982	1832	150	2262	2091	171	60	1	2091	4800	0	1568	2091	0.471	21.53	C
NB	Elkhorn Boulevard Loop On-Ramp	2	1	255	1832	1492	340	2091	1703	388	49	1	1703	4800	0	1277	1703	0.436	20	B
NB	I-5 Southbound On-Ramp	2	1	100	2352	2000	352	2684	2282	402	65	1	2282	4800	0	1712	2282	0.559	25.6	C

	Segment	PM Flow Inputs			PM LOS Performance Measures												
		Downstream Volume (D)	Upstream Volume (F)	Ramp Volume (R)	v_D	v_F	v_R	v_F/S_{FR}	P_{FM}	v_{12}	Capacity	v_3		v_{12a}	v/c	D	LOS
		(veh/h)	(veh/h)	(veh/h)	(pc/h)	(pc/hr)	(pc/h)			(pc/h/ln)						(pc/mi/ln)	
SB	Elverta Road Loop On-Ramp	2064.4	1984	80	2356	2265	91	65	1	2265	4800	0	1699	2265	0.491	22.06	C
SB	Elverta Rd Diagonal On-Ramp	2094.4	2064	30	2390	2356	34	67	1	2356	4800	0	1767	2356	0.498	22.44	C
SB	Elkhorn Boulevard Loop On-Ramp	1774.4	1414	360	2025	1614	411	46	1	1614	4800	0	1211	1614	0.422	19.61	B
SB	Elkhorn Boulevard Diagonal On-Ramp	2154.4	1774	380	2459	2025	434	58	1	2025	4800	0	1519	2025	0.512	23.58	C
NB	Elverta Rd Diagonal On-Ramp	4370.3	4240	130	4988	4839	148	138	0.585	2830	7200	1005	2123	2830	0.693	27.01	C
NB	Elverta Road Loop On-Ramp	4240.3	3750	490	4839	4280	559	122	0.586	2507	7200	887	1880	2507	0.672	27.31	C
NB	Elkhorn Boulevard Diagonal On-Ramp	4420.3	4210	210	5045	4805	240	137	1	4805	4800	0	3604	4805	1.051	43.21	F
NB	Elkhorn Boulevard Loop On-Ramp	4210.3	4050	160	4805	4623	183	132	1	4623	4800	0	3467	4623	1.001	41.27	F
NB	I-5 Southbound On-Ramp	5280.3	4342	938	6026	4956	1071	142	1	4956	4800	0	3717	4956	1.256	51.36	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

Segment Inputs					Improved Cumulative+Cargo+MPU Conditions													
					Flow Inputs		AM LOS Performance Measures						PM LOS Performance Measures					
		Length	Number of Lanes	Interchange Density	AM Peak	PM Peak	V_p	FFS		S	D	LOS	V_p	FFS		S	D	LOS
		(ft)	(N)	(I/mi)	(veh/h)	(veh/h)	(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)		(pc/h/ln)	(mi/h)		(mi/h)	(pc/mi/ln)	
Southbound	North of Elverta Road Off-Ramp	2900	2	1.00	3,757	2,094	2144.15	72.18	70	59.6595	35.94	E	1195.174	72.18	70	69.9997	17.074	B
	North of Elkhorn Rd Off-Ramp	3500	2	1.33	3,627	2,114	2069.96	71.3	70	61.2207	33.812	D	1206.587	71.3	70	69.9995	17.237	B
	North of I-5 Northbound Off-Ramp	0	2	1.63	4,137	2,324	2361	70.56	70	54.3642	43.429	E	1326.424	70.56	70	69.8146	18.999	C
	South of I-5 Northbound Off-Ramp	1300	2	1.63	3,264	1,975	1862.82	70.56	70	64.9038	28.701	D	1127.266	70.56	70	69.9386	16.118	B
Northbound	North of Elverta Road Diagonal On-Ramp	5900	3	1.00	1,842	4,170	700.685	72.18	70	67.1079	10.441	A	1586.527	72.18	70	68.2669	23.24	C
	North of Elkhorn Rd Diagonal On-Ramp	4000	2	1.33	1,912	4,380	1090.97	71.3	70	69.8621	15.616	B	2499.628	71.3	70	50.4072	49.589	F
	North of I-5 Southbound On-Ramp	-700	2	1.63	2,352	5,280	1342.06	70.56	70	69.7659	19.237	C	3013.215	70.56	70	31.8621	94.57	F
	South of I-5 Southbound On-Ramp	700	2	1.63	2,000	4,342	1141.19	70.56	70	69.9599	16.312	B	2477.943	70.56	70	51.0556	48.534	F

Univeral Inputs:

PHF 0.92

(P_T) 10%

f_{HV} 0.952380952

Improved Cumulative+Cargo+MPU Conditions

Segment Inputs / AM Flow Inputs / AM LOS Performance Measures

		Number of Lanes (N)	Number of Ramp Lanes	Length of Acceleration Lane (L_A) (ft)	Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h)	v_F (pc/h)	v_R (pc/h)	v_F/S_{FR}	P_{FM}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Loop On-Ramp	2	1	280	3607	3307	300	4117	3775	342	108	1	3775	4800	0	2831	3775	0.858	35.68	E
SB	Elverta Rd Diagonal On-Ramp	2	2	265	3627	3607	20	4140	4117	23	118	1	4117	4800	0	3088	4117	0.862	36.09	E
SB	Elkhorn Boulevard Loop On-Ramp	2	1	235	4007	3187	820	4574	3638	936	104	1	3638	4800	0	2728	3638	0.953	39.25	E
SB	Elkhorn Boulevard Diagonal On-Ramp	2	1	140	4137	4007	130	4722	4574	148	131	1	4574	4800	0	3430	4574	0.984	41.36	E
NB	Elverta Rd Diagonal On-Ramp	3	1	260	1842	1772	70	2102	2022	80	58	0.585	1183	7200	420	887	1183	0.292	13.65	B
NB	Elverta Road Loop On-Ramp	3	1	290	1772	1762	10	2022	2011	11	57	0.586	1178	7200	417	883	1178	0.281	12.93	B
NB	Elkhorn Boulevard Diagonal On-Ramp	2	1	240	1912	1782	130	2182	2034	148	58	1	2034	4800	0	1525	2034	0.455	20.92	C
NB	Elkhorn Boulevard Loop On-Ramp	2	1	255	1782	1572	210	2034	1794	240	51	1	1794	4800	0	1345	1794	0.424	19.63	B
NB	I-5 Southbound On-Ramp	2	1	100	2352	2000	352	2684	2282	402	65	1	2282	4800	0	1712	2282	0.559	25.6	C

PM Flow Inputs / PM LOS Performance Measures

		Downstream Volume (D) (veh/h)	Upstream Volume (F) (veh/h)	Ramp Volume (R) (veh/h)	v_D (pc/h)	v_F (pc/hr)	v_R (pc/h)	v_F/S_{FR}	P_{FM}	v_{12} (pc/h/ln)	Capacity	v_3		v_{12a}	v/c	D (pc/mi/ln)	LOS
SB	Elverta Road Loop On-Ramp	2084.4	2004	80	2379	2288	91	65	1	2288	4800	0	1716	2288	0.496	22.23	C
SB	Elverta Rd Diagonal On-Ramp	2114.4	2084	30	2413	2379	34	68	1	2379	4800	0	1784	2379	0.503	22.62	C
SB	Elkhorn Boulevard Loop On-Ramp	1994.4	1634	360	2276	1865	411	53	1	1865	4800	0	1399	1865	0.474	21.57	C
SB	Elkhorn Boulevard Diagonal On-Ramp	2324.4	1994	330	2653	2276	377	65	1	2276	4800	0	1707	2276	0.553	25.12	C
NB	Elverta Rd Diagonal On-Ramp	4170.3	4070	100	4760	4645	114	133	0.585	2717	7200	964	2037	2717	0.661	25.87	C
NB	Elverta Road Loop On-Ramp	4070.3	3750	320	4645	4280	365	122	0.586	2507	7200	887	1880	2507	0.645	25.89	C
NB	Elkhorn Boulevard Diagonal On-Ramp	4380.3	4210	170	4999	4805	194	137	1	4805	4800	0	3604	4805	1.042	42.88	F
NB	Elkhorn Boulevard Loop On-Ramp	4210.3	4120	90	4805	4703	103	134	1	4703	4800	0	3527	4703	1.001	41.31	F
NB	I-5 Southbound On-Ramp	5280.3	4342	938	6026	4956	1071	142	1	4956	4800	0	3717	4956	1.256	51.36	F

Univeral Inputs:

Length	1500	(ft)
S_{FF}	70	(mi/h)
S_{FR}	35	(mi/h)
PHF	0.92	
(P_T)	10%	
f_{HV}	0.952380952	

RTC-1

Comment Letters

REGIONALSAN
TAKING THE WASTE OUT OF WATER
Sacramento Regional County Sanitation District

Main Office
10060 Goethe Road
Sacramento, CA 95827-3553
Tel: 916.876.6000
Fax: 916.876.6160

Treatment Plant
8521 Laguna Station Road
Elk Grove, CA 95758-9550
Tel: 916.875.9000
Fax: 916.875.9068

May 26, 2021

To Whom It May Concern,
County of Sacramento – Office of Planning & Environmental Review
827 Seventh Street, Room 225
Sacramento, CA 95814

Subject: Notice of Preparation of a Draft Supplemental Environmental Impact Report for the Sacramento International Airport (SMF) Master Plan Update (PLER2020-00037)

To Whom It May Concern,

The Sacramento Regional County Sanitation District (Regional San) and the Sacramento Area Sewer District (SASD) have the following comments regarding the Supplemental Draft Environmental Impact Report for the Sacramento International Airport Master Plan Update.

The Sacramento County Department of Airports has recently completed a review of the existing Master Plan (2007) for the Sacramento International Airport (SMF). The update largely consists of revisions to proposed airport projects and facilities based on revised aviation forecasts. The update looks at previously identified projects and projected growth at SMF. Many of the updates center on the timing of the project along with minor changes to locations and size of facilities.

SASD is the local sewer service provider for the Project area. Regional San provides conveyance from local trunk sewers to the Sacramento Regional Wastewater Treatment Plant (SRWTP) through large-diameter pipelines called interceptors.

In order to receive sewer service, the project proponent must complete a Sewer Master Plan that includes connection points and phasing information to assess the capacity of the existing sewer system to accommodate the additional flows generated by this project.

In February 2013, the Regional San Board of Directors adopted the Interceptor Sequencing Study (ISS). The ISS updated the Regional San Master Plan 2000. The ISS is located on the Regional San website at www.regionalsan.com/ISS.

In March 2021, the SASD Board of Directors approved the most current SASD planning document, the 2020 System Capacity Plan Update (SCP). The SCP is located on the SASD website at www.sacsewer.com/devres-standards.html.

Regional San and SASD are not land-use authorities. Regional San and SASD plans and designs its sewer systems using information from land use authorities. Regional San and SASD base the projects identified within its planning documents on growth projections provided by these land-use authorities.

Customers receiving service from Regional San and SASD are responsible for rates and fees outlined within the latest Regional San and SASD ordinances. Fees for connecting to the sewer system recover the capital investment of sewer and treatment facilities that serves new customers. The SASD ordinance is located on the SASD website at www.sacsewer.com/ordinances.html and the Regional San ordinance is located on the Regional San website at www.regionalsan.com/ordinance.

If you have any questions regarding this letter, please feel free to contact me at (916) 876-6104 or by email: armstrongro@sacsewer.com.

Sincerely,

Robb Armstrong

Robb Armstrong
Regional San Development Services & Plan Check

Little. Alison

From: Anna Starkey <astarkey@auburnrancheria.com>
Sent: Tuesday, June 1, 2021 2:01 PM
To: Little. Alison
Subject: NOA of DSEIR: Sacramento International Airport Master Plan Update (PLER2020-00037)

EXTERNAL EMAIL: If unknown sender, do not click links/attachments.

Dear Ms. Little,

Thank you for the notification and opportunity to review the DSIER for the above referenced project. UAIC has no specific comments on the document but did want to say that we appreciate including tribal values in the mitigation measures for tribal cultural resources.

Thank you,
Anna Starkey

The United Auburn Indian Community is now accepting electronic consultation request, project notifications, and requests for information! Please fill out and submit through our website. Do not mail hard copy letters or documents. https://auburnrancheria.com/programs-services/tribal-preservation ***Book mark this link!***

Anna M. Starkey, M.A., RPA
Cultural Regulatory Specialist
Tribal Historic Preservation Department| UAIC
10720 Indian Hill Road
Auburn, CA 95603
Direct line: (916) 251-1565 | Cell: (530) 863-6503
astarkey@auburnrancheria.com |www.auburnrancheria.com

Regional Transit

Sacramento Regional Transit District
A Public Transit Agency
and Equal Opportunity Employer

Administrative Offices
1400 29th Street
Sacramento, CA 95816
916-321-2800

Mailing Address
P.O. Box 2110
Sacramento, CA 95812-2110

Human Resources
2810 O Street
Sacramento, CA 95816
916-556-0299

Customer Service &
Sales Center
1225 R Street
Sacramento, CA 95811

Route, Schedule & Fare
Information
916-321-BUSS (2877)
TDD 916-483-HEAR (4327)
sacrt.com

Public Transit Since 1973

June 16, 2021

Joelle Inman, Environmental Coordinator
Office of Planning and Environmental Review
827 7th Street, Room 225, Sacramento, CA 95814

NAME OF DEVELOPMENT: Sacramento International Airport Master Plan Update
TYPE OF DOCUMENT: Draft Supplemental Environmental Impact Report

The Sacramento Regional Transit District (SacRT) has reviewed the Draft Supplemental Environmental Impact Report (DSEIR) for the Sacramento International Airport Master Plan Update. The Sacramento International Airport (SMF) is located approximately 10 miles northwest of downtown Sacramento. SMF is generally bounded by Power Line Road to the east, Garden Highway to the west, Interstate-5(I-5)/Sacramento River to the west and south, and West Elverta Road to the north. The current project looks at a development and operation horizon of 20 years (2018 through 2038) with four Planning Activity Levels (PALs). Due to the extended 20-year planning horizon, Master Plan projects or facilities identified in PAL 4 (2034-2038) are beyond the scope of this DSEIR and are not analyzed at the project level.

SacRT has the following comments regarding the DSEIR:

SacRT appreciates the acknowledgement of current and future transit opportunities to SMF. The proposed Master Plan Update continues to show the Light Rail Extension and provides right of way in PAL 4. SacRT requests to be contacted if any development has a potential impact to the reserved Light Rail Extension right of way.

Staff appreciated the opportunity to comment. If you have further questions regarding these comments, please contact me at (279) 234-8374 or kschroder@sacrt.com.

Sincerely,

Kevin Schroder
Senior Planner, SacRT

CC:
James Boyle, Director of Planning, SacRT
Sarah Poe, Planner, SacRT

California Department of Transportation

DISTRICT 3
703 B STREET | MARYSVILLE, CA 95901-5556
(530) 741-4233 | FAX (530) 741-4245 TTY 711
www.dot.ca.gov

June 28, 2021

Ms. Joelle Inman
Environmental Coordinator
Sacramento County/ Office of Planning and Environmental Review
827 7th Street, Room 225
Sacramento, CA 95814

Draft Supplemental Environmental Impact Report (SEIR)- Sacramento International Airport Master Plan Update

Dear Ms. Inman:

Thank you for including the California Department of Transportation (Caltrans) in the review process for the project referenced above. Caltrans' new mission, vision, and goals signal a modernization of our approach to California's transportation system. We reviewed this local development for impacts to the State Highway System (SHS) in keeping with our mission, vision, and goals for sustainability/livability/economy, and safety/health. We provide these comments consistent with the State's smart mobility goals that support a vibrant economy, and build communities, not sprawl.

This is a Draft Supplemental Environmental Impact Review (SEIR) for the Sacramento International Airport Master Plan Update. The revised Master Plan studies the existing program for modifications of existing facilities and development of new facilities at SMF through the year 2038. Changes to the prior project along with new topical environmental analyses were considered to determine whether the Project would have the potential to result in significant impacts. Based on the information provided, Caltrans provides the following comments:

Forecasting & Modeling

- On page 1-6 of the Project Description, the last bullet shows the Cargo Facility will increase from 226,000 sq. ft. to 950,000 sq. ft. but the number of employees from the cargo and airport improvements still remains at 2,020. Is there a reason why?
- On page 11-8, what year was used for cumulative conditions analysis?
- On page 11-9, when is the cargo facility expected to be completed?
- Page 11-11 TC 1 Mitigation Measures TDM mitigation measures suggest promoting bicycling/pedestrian mode by adding incentives for carpooling and alternate travel modes.
  - Did the current analysis find out how many people bike and walk to work to the airport and number of employees that carpool?
  - How does the Sacramento County plan to address and mitigate the lack of active transportation and complete streets connecting to the Airport?
  - Does the applicant plan to have a TDM monitoring strategy to see if the suggested measures are indeed helping in reducing VMT?

Right of Way/Hydraulics

- Caltrans requests the drainage calculations verifying that there is no additional flow (Q) of water going into Caltrans' existing drainage system for the 100-year storm event.
- Caltrans requests the spread and depth calculations for the curb and gutter to be constructed with respect to the 10-year design storm (see HDM 831.3).
- Caltrans requests the 2018 version of the Caltrans Standard Plans for Curbs & Driveways.
- All work proposed and performed within the State's highway right of way must be in accordance with Caltrans' standards and require a Caltrans Encroachment Permit prior to commencing construction.
    - Email: D3encpermit@dot.ca.gov
    - Mail: 703 B Street, Marysville CA 95901
      Attn: Encroachment permits.
    - Call (530) 741 - 4403

- Caltrans requests the applicant identify our right of way along with the distance to centerline, please have them contact D3rwmaprequest@dot.ca.gov for any right of way map request/information needs.

Traffic Operations/Traffic Safety

- Caltrans is concerned the DSIER and the DRAFT VMT Assessment & Local Access, Safety, and Circulation Study does not adequately evaluate and mitigate short and long-term safety impacts to Caltrans facilities.
    - Caltrans is concerned about the new safety impacts from the new commercial development and parking lot located south of I-5. There are limited amounts of vehicles coming from this area and the addition of this new commercial development could create significant impacts to the already underperforming interchange both operationally and in terms of safety.
    - Caltrans is concerned about the significant safety impacts from ramp queuing reaching/backing into the I-5 freeway lanes. This would be major safety concern that requires monitoring and a proactive approach to address this prior to having ramp queuing reaching the mainline.
    - Drivers must have sufficient room to access the extended off ramp and decelerate on the off-ramp via the decelerating lane due to ramp queuing as this creates a potential rear end/sideswipe collision pattern for the through mainline traffic.
    - Caltrans requests a discussion and analysis on the short and long-term traffic safety impacts and mitigations for Caltrans facilities in the DSEIR and in the Draft VMT Assessment & Local Access, Safety, and Circulation Study due to the existing and future potential collision patterns.
    - Please note, that Caltrans has adopted the 4 Pillars of Traffic Safety as our new standard to reduce fatal and serious injury collisions on the State Highway System. This includes the use of FHWA Safety Countermeasures, evaluation of the Safe System approach to traffic safety, the use of innovative safety measures, and consideration of equity.

- Caltrans recommends a full interchange redesign so that both intersections would adequately handle additional traffic volumes. We are concerned about the safety impacts with the queueing vehicles at the off-ramps and on Airport Boulevard well into the future.
    - Additionally, the interchange would need to go through the Intersection Control Evaluation (ICE) process to determine the best intersection control for the location.

Please provide our office with copies of any further actions regarding the Master Plan. We would appreciate the opportunity to review and comment on any changes related to this development.

If you have any questions regarding these comments or require additional information, please contact Edward Lincoln, Intergovernmental Review Coordinator, at (530) 741-5409 or by email at Edward.Lincoln@dot.ca.gov.

Sincerely,

Alex Padilla

Alex Padilla
Branch Chief, Transportation Planning – South
Planning, Local Assistance, and Sustainability

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

June 28, 2021

Alison Little
Sacramento County
Department of Planning and Environmental Review
827 7th Street, Room 220
Sacramento, CA 95814
littlea@saccounty.net

Sent Via Email Only

Subject: Draft Supplemental Environmental Impact Report for the Sacramento International Airport Master Plan Update (PLER2020-00037) (SAC200500809)

Dear Alison,

The Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) is required to represent the people of Sacramento County in influencing the decisions of other agencies whose actions may have an adverse impact on air quality.[1] We review and provide comments through the lead agency planning, environmental and entitlement processes with the goal of reducing adverse air quality impacts and ensuring compliance with the California Environmental Quality Act (CEQA).

Project Description: It is unclear from the project description and technical analyses whether the cargo facility was analyzed as a subset of the master plan or separate from it. Please clarify the project description and related discussions within the air quality, greenhouse gas and transportation chapters. Special attention should be given to clarifying the cargo facility relationship to the master plan in discussions for Table AQ-7: Summary of Operational Emissions for the Cargo Facility, and Table AQ-8: Summary of Operational Emissions for the Master Plan Update. (See "General Conformity" below for comments on Tables AQ-7 and AQ-8.)

Mitigation Measure AQ-4 requires that "all master plan projects which include loading docks, including the proposed cargo facility, shall ensure, through sale or leasing agreements, that the haul fleet consist of trucks that as a minimum meet the emissions standards of a 2010 vehicle model, and as trucks are replaced they are replaced with the newest available model."

- The Sac Metro Air District recommends annual reporting to the County to ensure the project fleets are in compliance with this measure.

[1] California Health and Safety Code Section 40961

- To ensure compliance of hired and third-party fleets serving the facility, we also recommend project occupants verify each fleet has a Truck and Bus certificate of compliance, which would also be reported to the County annually.

Mitigation Measure AQ-5 requires participation in a transportation demand management (TDM) program detailing strategies to reduce single occupant vehicle employee trips.

- The TDM measures should apply to all facilities within the SMF master plan. As such, the following language should be removed from AQ-5: "For the proposed cargo facility and other projects which exceed the SMAQMD operational screening levels". The sentence should simply start with "Prior to the issuance of occupancy permits…"

- The TDM program should consist of a written plan documenting employee VMT-reducing measures verified for technical adequacy by the Sac Metro Air District.

- **Recommended new mitigation measure: Because the project is significant for operational emissions, an operational air quality mitigation plan (AQMP) must be developed that demonstrates a reduction in mobile source ozone precursors of at least 15%, as required by the County's General Plan Policy AQ-4 and implementation measure B.** *The AQMP may include measures from the TDM plan.*

- To discourage single occupancy employee commuting, the Sac Metro Air District recommends that the TDM plan and AQMP contain at least the following measures:

    - Sustainable mode subsidy for employees
    - Guaranteed Ride Home
    - Parking cash out and/or employee-paid parking

- The TDM plan should have a yearly reporting requirement. Please provide the Sac Metro Air District with a copy of the report.

- The Sac Metro Air District would like the opportunity to review and comment on the draft TDM and AQMP plans prior to approval.

Mitigation Measure AQ-6 requires membership in or creation of a transportation management association (TMA).

- A non-revocable funding mechanism in perpetuity must be identified. This language should be included in the MMRP.

- As with AQ-5, please strike from the measure the following language: "For the proposed cargo facility and other projects which exceed the SMAQMD operational screening levels".

Mitigation Measure AQ-7 requires low VOC content paints that exceed the regulatory VOC limits put forth by Sac Metro Air District Rule 442.

- The mitigation measure should state that development and building improvement plans shall submit technical data sheets and a brief summary indicating the VOC content of any architectural coatings proposed to be applied. In addition, the County should send annual notifications to remind tenants that they are required to utilize VOC paints that exceed regulatory requirements.

General Conformity:

- $PM_{2.5}$: The DEIR states that the General Conformity de minimis threshold for $PM_{2.5}$ is 70 tons per year, however Sacramento is in moderate nonattainment, not severe, so the threshold is 100 tons per year.

- $PM_{10:}$ Sacramento is in attainment-maintenance for PM_{10}, with a de minimis threshold of 100 tons per year. Please discuss this in the EIR.

- NO_x and ROG:

    - The DEIR does not discuss general conformity for NO_x or ROG, for which Sacramento is in severe nonattainment. The de minimis thresholds are 25 tons per year for each pollutant.

    - The sum of NO_x values in Tables 7 and 8 suggest that conformity would be exceeded, however, this is difficult to ascertain due to the unclear relationship between the Master Plan and the Cargo Facility (see Project Description comment at the beginning of this letter).

Toxic Air Contaminants: The DEIR states that diesel particulate matter (DPM) is the only toxic air contaminant associated with the project. The discussion/analysis should be corrected to reflect the fact that there are other toxic air contaminants that the project will emit. These include total organic gases (TOG) and $PM_{2.5}$.

Greenhouse Gases

- The Sac Metro Air District recommends that the County incorporate our Best Management Practices for greenhouse gas construction emissions, which can be found here: http://www.airquality.org/LandUseTransportation/Documents/Ch6ConstructionMitMeasuresFINAL5-2016.pdf. Best practices include the use of renewable diesel fuel and lower carbon concrete options.

- For electric vehicle charging infrastructure, the EIR should state what the current CalGreen standard is for each type of airport use and give an estimate of parking spaces/infrastructure needed.

Thank you for your consideration of these comments. I can be reached at (279) 207-1127 or rdubose@airquality.org.

Sincerely,

RDuBose

Rachel DuBose
Air Quality Planner / Analyst

C: Paul Philley, AICP, Sac Metro Air District
Janice Lam-Snyder, Sac Metro Air District

City of
SACRAMENTO
Community Development

Todd Smith, Interim Environmental Coordinator
Office of Planning and Environmental Review
827 7th Street, Room 225
Sacramento, CA 95814

August 3, 2021

Subject: **COMMENTS ON THE FOR DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT (DSEIR) FOR SACRAMENTO INTERNATIONAL AIRPORT (SMF) MASTER PLAN UPDATE PROJECT**

Dear Mr. Smith,

On October 30, 2020, the City of Sacramento (City) provided formal comments for the Notice of Preparation for the Draft Supplemental Environmental Impact Report (DSEIR) for Sacramento International Airport (SMF) Master Plan Update (Project) which formally kicked-off the environmental review process. When the DSEIR was released for public review, the County sent notification to the City via standard USPS mail. The City did not receive the notice electronically and many of us are working remotely while COVID-19 measures are still in place. As such, we only recently became aware of the availability of the DSEIR for public review. The City's comments below reflect our limited review of the DSEIR within the remaining time period. The Planning Division of the Community Development Department presents the comments below as single letter representing multiple City departments.

Planning

Biological Resources/Natural Environment

1. The DSEIR states that the updated SMF Master Plan will not harm any existing Habitat Conservation Plan (HCP). does not discern how this will be accomplished. The DSEIR also references these HCPs (Natomas Basin and Metro Air Park), but as the County is not a signatory to either plan, dismisses any impact that could be had to these plans. To clarify and ensure that there are no impacts to either the Natomas Basin or Metro Air Park HCPs, the City of Sacramento requests that any mitigation lands be designated on existing Airport/County-owned lands. This will allow the existing HCPs the flexibility needed in finding lands in the Natomas basin for mitigation in accordance with their respective requirements and enable their successful implementation to continue.

2. The updated SMF Master Plan shows a much larger area to be paved than had been expected in the past. City staff would encourage much of the new paved area proposed for the new air cargo terminal to be pervious paving or other best practice to reduce impacts on the ground water basin and potential flooding/stormwater runoff issues.

Traffic Analysis

1. The traffic analysis provided by Kimley Horn specifies the new thresholds of VMT rather than LOS, but does not appear to provide context of the analysis in the cumulative impacts. Notably, the Grandpark and Upper Westside master plans currently in process with the County (and in review prior to this report being released) are omitted. Knowing the context of the impacts from the updated Airport Master Plan in context with these two large master plans is key for the cumulative analysis of this plan.

Public Works

1. The Draft Supplemental Environmental Impact Report for Sacramento International Airport (SMF) Master Plan Update should show the peak hour traffic volumes without and with the buildout of the Master Plan at SR 99 and Elkhorn Boulevard interchange intersections and at any access roadways to the airport.

2. A fair share percentage calculation towards future improvements at SR 99 and Elkhorn Boulevard interchange must be provided.

3. Any modifications to roadways, intersections, and driveways in City of Sacramento are subject to review and approval of Department of Public Works.

4. The construction Contractor must provide a construction traffic control plan per City Code 12.20.030 to the satisfaction of the City Traffic Engineer. The plan shall ensure that acceptable operating conditions on local roadways and freeway facilities are maintained. At a minimum, the plan shall include:

   - The number of truck trips, time, and day of street closures.
   - Time of day of arrival and departure of trucks.
   - Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting.
   - Provision of a truck circulation pattern.
   - Provision of driveway access plan so that save vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas).

- Maintain safe and efficient access routes for emergency vehicles.
- Manual traffic control when necessary.
- Proper advance warning and posted signage concerning street closures.
- Provisions for pedestrian safety.

A copy of the construction traffic management plan shall be submitted to local emergency response agencies and these agencies shall be notified at least 14 days before the commencement of construction that would partially or fully obstruct roadways.

As this project progresses through environmental review, engineering, construction, and phased openings, the City of Sacramento looks forward to continued collaboration with the County. If you have follow-up questions or seek clarifications on any of the above issues, please contact Cheryle Hodge at chodge@cityofsacramento.org or 808-5971.

Sincerely,

Cheryle L. Hodge

Cheryle Hodge
Principal Planner/New Growth Manager, Community Development Department

cc: Tom Pace, Director, Community Development Department
Ryan Moore, Director, Public Works Department
Greg Sandlund, City of Sacramento, Planning Director
Pelle Clarke, City of Sacramento, Senior Civil Engineer
Scott Johnson, City of Sacramento, Senior Planner
Michael Hanebutt, City of Sacramento, Associate Planner

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

September 24, 2021

Alison Little
Sacramento County
Department of Planning and Environmental Review
827 7th Street, Room 220
Sacramento, CA 95814
littlea@saccounty.net

Sent Via Email Only

Subject: Addendum to Comment Letter on Draft Supplemental Environmental Impact Report (DSEIR) for the Sacramento International Airport Master Plan Update (PLER2020-00037) (SAC200500809)

Dear Alison,

Please include this letter as an addendum to the Sacramento Metropolitan Air Quality Management District's comments on the Draft Supplemental Environmental Impact Report (DSEIR) for the Sacramento International Airport Master Plan Update (Master Plan Update), sent on June 28, 2021.

The Final Supplemental Environmental Impact Report (FSEIR) should explain that general conformity determinations, which are conducted by the Federal Aviation Administration (FAA), do not apply to planning and information-related actions[1], but rather to the subsequent individual projects to be implemented under the Master Plan Update. Within this discussion, the FSEIR must clarify the relationship between the Master Plan Update and the cargo facility.

To reflect the above information, we make the following recommendation: for the 'Master Plan Update' portion of the air quality analysis, we recommend removing references to the general conformity de minimis thresholds within the emissions tables.

For cargo facility emissions tables, the conformity de minimis thresholds can be retained, since at this time it is known that a conformity analysis will need to occur. Note, however, that the FAA will conduct its own air quality analysis, and the results may be different than reported in the FSEIR.

The above clarifications, reflected within the FSEIR, should resolve concerns we raised in our comment letter regarding DSEIR Tables 7 and 8.

[1] 40 CFR 93.153(c)(2)(xii)

Thank you for considering this addendum to our comments. Please contact me at rdubose@airquality.org or (279) 207 – 1127 if you have questions.

Sincerely,

RDuBose

Rachel DuBose
Air Quality Planner / Analyst

C:
Paul Philley, AICP, Sac Metro Air District

COMMENTS AND OBSERVATIONS CONCERNING
THE DRAFT SUPPLEMENTAL EIR
SACRAMENTO INTERNATIONAL AIRPORT (SMF)
MASTER PLAN UPDATE
(Dated: May, 2021)

Context and Predicate:
These observations and critique of the Draft Supplemental EIR of the SMF Master Plan Update were preceded by a May 22, 2020 emailed solicitation to participate in General Plan revisions from J. Glen Rickelton, Airport Planning and Environment Manager, Sacramento County Department of Airports. Rickelton's message was directed to a group of individuals who, as a voluntary ad hoc association of residents, engaged the airport in 2018 and 2019. These community advocates sought changes in contemporary departure practices, specifically those affecting inhabitants south and east of the airport. As such departures pass over residential communities early in takeoff, residents beneath experience significant noise pollution, typically to the extent that "normal" enjoyment of home life is denied. Also, engine failure in liftoff is an added concern, as a flight so afflicted—especially with total power failure–would be over residential areas at low altitude. This renders problematic chances of safely returning to the airport, or avoiding homes, schools or businesses in the event of extreme aircraft distress and crash.

Failure to Involve Interested Parties:
The engagement efforts initiated by residents were inconclusive. However, on January 17, 2020 counsel retained by the City of Sacramento filed with Federal aviation authorities a request that the city be involved in the development of anticipated changes in departure procedures and any associated environmental analysis recommended by the airport. Specifically, the City requested the opportunity to comment before the specified procedures were finalized and implemented. Therefore, to the degree that the Master Plan update and Draft EIR is intended to interlock, relate, be dependent on or justify the outcome of 1/17 referenced practices, the outside counsel retained by the City of Sacramento (or the City Attorney's office itself), should be a party to and should have been given an opportunity to participate in the development of the Draft EIR for the SMF Master Plan Update. Despite soliciting contributions from other entities (page 1-21), there is no evidence that the airport reached out to the officials or the retained counsel specifically identified as interested in airport environmental assessments.

Public Meeting "Substitution" and short Master Plan response period:
According to the Rickelton's May 2020 email, and the title page of an associated PDF presentation, a "virtual" master plan presentation and opportunity for community feedback was being offered. This characterization posed several problems. Firstly, the period of public feedback was shockingly constrained to a single calendar week of seven days announced at the beginning of and taking place over a three-day holiday weekend! This alone hardly constituted a serious effort to (quoting the Rickelton communication directly) "maintain open lines of communication and demonstrate the Department's commitment to planning with stakeholders." A normal and reasonable standard for public feedback is 45 days, as in the adoption of rules under the Administrative Procedure Act. Further, while public gatherings were constrained during the medical emergency posed by Covid-19, this did not prevent substitutions, such as a virtual town hall or a phone forum, with appropriate planning and sufficient notification, which was not attempted in this case. It is unclear why the matter had to be so rushed as to shockingly foreshorten public notice and comment, probably contrary to statutory requirements.

Reality is, the airport did not in this instance and, based upon the evidence of past practice relative to responding to individual noise complaints, does not sufficiently engage the stakeholder public and interested groups in decision-making affecting the local community. When recently a runway closure for upgrades resulted in a dramatic intensification of noise and risk, the airport made no known effort to solicit community input on mitigation steps to lessen such impacts. When replying to the expressions of noise and safety concerns by individual residents, airport responses are typically so dismissive, deflective or off-topic as to dash any hope of remediation or follow-up. If the airport intends the "community to be a part of the success and growth of our Airports," as the Director of Airports has been quoted, then a great deal more effort to cultivate community involvement is needed. "Direct, up front notification" (Rickelton letter) of a handful of participants in an inconclusive engagement that took place in the past and was, moreover, discontinued by the airport, can in no way substitute for a full-throated initiative, reversing practices which have only contributed to discourage public involvement up to this point. To so shamelessly act insults the community and undermines good governmental practice.

<u>Critically Missing Goal</u>:
Closure of the west runway in 2019 was an example of the kinds of airfield adjustments included on page 7 of the PDF Master Plan presentation. However, the goal of safety maximization for residents adjacent to the airport did not appear among the construction planning goals stated on page 3 of the PDF General Plan presentation, nor is it addressed in the Safety topics of the Draft EIR. This is, however, a subject directly within the scope of the planning effort and its omission is negligence on the part of airport officials. West runway closure specifically resulted in a dramatic intensification of risks and noise to nearby Natomas residents for a significant period of time. While the possibility of a catastrophic event taking place might seem statistically rare, events have occurred which suggest differently. A La Guardia 2009 departure which, after striking a flock of geese, was forced to ditch into the Hudson River is the prototypic scenario. The same bird species responsible for the engine failures of the La Guardia flight inhabit the wetlands discussed in the Draft EIR, but their presence is never mentioned. The bird species in question is not only seen to migrate at the same altitude and paths taken by departing flights, they inhabit Natomas all year long, as opposed to seasonally. To ignore and leave unmentioned catastrophic risks because they are inconvenient to contemplate or discounted as statistically uncommon is especially irresponsible because Natomas is exposed to exactly the very same hazards that the La Guardia flight encountered. Moreover while catastrophic concerns have been repeatedly brought to the attention of the airport, they have yet to be included in mitigation or preventative measures made widely known to the community.

<u>Noise Contours versus Actual Noise Pollution</u>:
With respect to south-flow departures, the noise contours depicted on the compatibility map of the 2020 PDF General Plan presentation and the Draft EIR are misleading and unrepresentative of reality, while at the same time analytically relied upon throughout. Air traffic actually bifurcates into two lobes, one southeast and the other directly east roughly along Del Paso Road. Both past and present actual paths were accurately reflected on pages 2 and 3 of the previously referenced 1/17 City letter to the FAA. Reality is, flight paths bank toward and then pass directly over Natomas residential communities, instead of—in conformity with the east contour border depicted on the compatibility map–over land deliberately set aside for noise abatement and which in an emergency would be preferred if a flight is aborted proximate to liftoff. Also the FAA has recently acknowledged that the 65 dB metric repeatedly relied upon in the Draft EIR when determining acceptable levels of noise pollution is being reassessed as it has become increasingly clear that unacceptable levels of aircraft noise take place at much lower decibel levels. The responsible manner in which to approach this difficulty in the Draft EIR

is not to rely on misleading and outdated noise contours or questionable metrics, but rather to accurately ascertain the actual problems, environmental and otherwise, which have been identified by Natomas residents.

Public concerns brushed aside in SMF master plan adoption

In a late Friday (6/5/2020) website posting, SMF responded to thirty-seven discrete written submissions commenting on revisions of the SMF master plan then underway. While not publishing original submissions, from the summaries prepared by airport staff it was clear that at least 34 of the 37 expressed safety and noise concerns, frequently with multiple observations, points and requests, including a request for an extension of the comment period. As the seven days allotted for comment, according to the airport, was an “extended” multi-day “online workshop” and “additional public review and comment” will be provided later, during environmental review, the airport made no accommodation for comment extension. Safety and noise concerns ended up walled off as “aspects of the airport beyond the basic scope of the master plan.” Compartmentalizing noise and safety, and then separately conducting environmental review, guaranteed that at no single point of decision-making would such concerns be taken into account with respect to overall airport operations. From past experience Natomas residents know that activities within the scope of the general plan, especially changes in departure practices absent efforts to mitigate effects of same, can actually impact residents enormously. And as the Draft EIR leaves unaddressed the previously expressed community objections and process abuse, the feared compartmentalization has clearly taken place.

Other Draft EIR Shortcomings, Omissions and CEQA Failures

The discussion of airport associated air pollution fails to take into account the odors residents can experience both when aircraft are taking off and when passing overhead. In the case of north-flow departures, it is not unusual for southern West Natomas residents to be exposed to the odor of drifting fumes from aircraft propelled into nearby neighborhoods by a prevailing northerly breeze. Also, similar levels of noxious odor can drift down to those below from south-bound flights, especially when near-calm wind conditions prevail. This pollution is intense enough to force residents to minimize breathing or close up homes until fumes dissipate. With respect to take off noise, the Draft EIR also fails to address the north-flow take-off engine noises which can be carried into residential Natomas by the wind. This problem is particularly noticeable when the East Runway is used for departures. Also, anyone familiar with roads between West Natomas and the airport can attest to the degraded condition of Power Line road between Bayou and Del Paso. This stretch of roadway already suffers severe shoulder deterioration. Nevertheless, the Draft EIR fails to address this matter under the relevant topic.

Something has gone wrong in both the General Planning and CEQA compliance process in this instance. The Draft EIR acknowledges on pages 9-5 and 9-6 departure concentration changes which have affected West Natomas but makes no effort to identify the associated consequences, environmental or otherwise. Rather than full public involvement, the airport purposely truncated community participation in the General Planning process. Overall, despite significant progress in the discussion of a variety of other matters, the Draft EIR’s other deficiencies are such as to constitute inadequacy from the standpoint of CEQA compliance. Ignoring and dismissing the identified matters for yet another decade will not make them disappear, nor will it improve public confidence in government’s ability to be open and honest about decision-making or provide desirable safety margins.

Ellery Kuhn
May 24, 2021
ellelesl@comcast.net

From:	Michael McKenna
To:	Clerk of the Board Public Email
Subject:	August 2nd 5:30 meeting to discuss Sacramento Airport Master Plan Update
Date:	Thursday, July 29, 2021 8:39:10 AM

Dears Sirs everything the Sacramento Airport has done since the implementation of Next Gen has unfairly
targeted the minority of people living directly under the concentrated new departure path (when planes are
departing south). We get low loud planes a minute apart during a great portion of the day.
When we open the door to go get the mail a plane is coming over. When we go to the side of the house to put
out the garbage there is a plane coming over, when we go into our backyard there is a plane coming over, when
we go to get the mail there is a plane coming over and before we can walk back into our house another plane
comes over. When I go for one of my bike rides a plane is coming over. when I am approaching our house after
my ride there is another plane approaching directly over our house.
And during my long rides all over the city I almost never see any planes.

A minority of the people living near the airport are being unfairly targeted under the new concentrated flight plans.
The FAA and Airport think if they only screw over a minority of the people near the airport the majority who have no
overflights will drown out those that do. They are turning neighbor against neighbor in a callous effort screw us over.

There is an easy and sensible solution. The airport can go south over EMPTY fields only one more mile at takeoff going
into the wind, as they are supposed to, before turning left (east). Since over 80% of the flights go to destinations south
of the airport this would be logical and efficient. In doing so they would miss OVER 99% of the houses near the airport.

What is happening is just not right and fair. Please give us our lives back. The airport has consistently lied to us and
refuses to take the health and safety of people living nearby into account when planning their routes.

There is a better way to do this, please make the airport accountable to its neighbors living nearby.

All we want is justice,

Thank you,
Michael McKenna 4767 Windsong St.

From: Ellery Kuhn
To: Clerk of the Board Public Email

Subject: Control # PLER2020-00037- Natomas/Rickelton. Sacramento Planning Commission 8/2/2021
Date: Saturday, July 31, 2021 12:35:35 PM

The concerns of West Natomas inhabitants south and east of the airport have not been adequately acknowledged or addressed in either the Draft Supplemental EIR for the SMF Master Plan Update or the Updated plan itself.

Subsequent to 2015, "South-flow" departures—the SMF takeoff pattern when prevailing winds are from the south and west (aka "off-shore," or "Delta Breeze")– pass in concentrated flight routes over residential communities early in takeoff. Consequently, residents beneath experience significant noise pollution, both in terms of loudness and frequency, typically to the extent that "normal" enjoyment of home life is denied. Also, engine failure during liftoff is an added concern, as a flight so afflicted —especially with total power failure–would be over residential areas at low altitude. This renders problematic chances of safely returning to the airport, or avoiding homes, schools or businesses in the event of extreme aircraft distress and crash.

The May 2020 opportunity for community feedback on the General Plan update was announced by email, but took place only over single calendar week of seven days commencing at the beginning of and extending through a three-day holiday weekend! To so severely foreshorten public notice and comment was probably contrary to statutory requirements and was certainly not in the interest of full community involvement. Despite this foreshortening, 34 of 37 responding residents requested that the general plan revision encompass the noted noise and safety matters. This the airport brushed aside with the assertion that "noise is outside of the scope of the plan update," but would be reviewed in the subsequent environmental process." This promised review has not occurred aside from the inclusion of comments submitted during the Draft EIR review period (PC Attachment 3), and cursory remarks contained on Draft EIR page 9-5. To displace the entire onus of noise and safety onto Federal aviation authorities is a convenient excuse for inaction and a dismay for many living in Natomas.

As previously predicted, compartmentalizing noise and safety by the airport and other county officials has guaranteed that at no single point of decision-making has such concerns be taken into account with respect to overall airport operations. From past experience Natomas residents know that activities within the scope of the general plan, especially changes in departure practices absent efforts to mitigate effects of same, can actually impact residents enormously. When recently a runway closure for upgrades resulted in a dramatic intensification of noise and risk, the airport made no known effort to solicit community input on mitigation steps to lessen such impacts. This amounts to walling off aspects of the airport beyond the basic scope of government decision-making. Closure of the west runway in 2019 is an example of the kinds of airfield adjustments included on page 7 of the PDF Master Plan presentation. However, the goal of safety maximization for residents adjacent to the airport did not appear among the construction planning goals stated on page 3 of the PDF General Plan presentation, nor was it addressed in the Safety topics of the Draft EIR. This is, however, a subject directly within the scope of the planning effort and its omission can be seen as negligence on the part of airport officials.

With respect to south-flow departures, the noise contours depicted on the compatibility map of the 2020 PDF General Plan presentation and the Draft EIR are misleading and unrepresentative of reality, while at the same time analytically relied upon throughout (as page 9-5 in effect admits). Air traffic actually bifurcates into two lobes, one southeast and the other directly east roughly along Del Paso Road. The responsible manner in which to approach this and other noted difficulties in the Draft EIR (PC attachment 3) is not to rely on misleading and outdated noise contours or questionable metrics, but rather to accurately ascertain the actual problems, environmental and otherwise, which have been identified by Natomas residents.
The discussion of airport associated air pollution fails to take into account the odors residents can experience both when aircraft are taking off and when passing overhead. In the case of north-flow departures, it is not unusual for southern West Natomas residents to be exposed to the odor of drifting fumes from aircraft propelled into nearby neighborhoods by a prevailing northerly breeze. Also, similar levels of noxious odor can drift down to those below from south-bound flights, especially when near-calm wind conditions prevail. This pollution is intense enough to force residents to minimize breathing or close up homes until fumes dissipate. With respect to take off noise, the Draft EIR also fails to address the north-flow take-off engine noises which can be carried into residential Natomas by the wind. This problem is particularly noticeable when the East Runway is used for departures. Also, anyone familiar with roads between West Natomas and the airport can attest to the degraded condition of Power Line road between Bayou and Del Paso. This stretch of roadway already suffers severe shoulder deterioration. Nevertheless, the Draft EIR fails to address this matter under the relevant topic.
Something has gone wrong in both the General Planning and CEQA compliance process in this instance. The Draft EIR acknowledges on pages 9-5 and 9-6 departure concentration changes which have affected West Natomas but makes no effort to identify the associated consequences, environmental or otherwise. Rather than full public involvement, the airport purposely truncated community participation in the General Planning process. Overall, despite significant progress in the discussion of a variety of other matters, the Draft EIR's other deficiencies are such as to constitute inadequacy from the standpoint of CEQA compliance. Ignoring and dismissing the identified matters for yet another decade will not make them disappear, nor will it improve public confidence in government's ability to be open and honest about decision-making or provide desirable safety margins.

Ellery Kuhn
July 31, 2021
ellelesl@comcast.net