California Environmental Quality Act

Initial Study

Early Childhood Development Center Project

Salinas, California

(State Clearinghouse No. 2017091067)

Lead Agency and Project Sponsor:

Alisal Union School District

Contact: Jim Koenig,
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Executive Summary

The Early Childhood Development Center Project (Project) is proposed for the northeast corner of Buckhorn Drive and Falcon Drive in the City of Salinas. The Project includes the acquisition of an 0.8-acre parcel from the City of Salinas and the construction of a one-story building housing five classrooms, a 22-stall parking lot, and a playground. The school will be designed to accommodate up to 90 preschool children and employ 15 staff and faculty members. The hours of operation will be 7:30 a.m. to 3:30 p.m., Monday through Friday, year-round. There will be no evening activities.

Alisal Union School District anticipates that construction will begin in February 2020 and be completed in August 2020.

Based on the California Environmental Quality Act Guidelines (CEQA Guidelines), the purpose of this Initial Study is to provide Alisal Union School District (District) with environmental information on the project to use as the basis for deciding whether to prepare an EIR or a Negative Declaration for the project.

This Initial Study concluded:

1. The project would have a less than significant impact or no impact on most of the environmental resources and conditions evaluated in the Initial Study. The Initial Study explains why there would be no impacts or the impacts would be less than significant.
2. The Initial Study identified several potentially significant environmental effects of the project in the following subject areas: aesthetics, biological resources, cultural resources, noise and traffic. The District can avoid or reduce to an insignificant level these impacts by incorporating in the project the mitigation measures listed in the table on the following pages.
3. Based on items 1 and 2, above, the District should adopt a Mitigated Negative Declaration for the project.

Mitigation Measures	
AE-1	**Aesthetics: Light and Glare** Prior to the start of construction, the District shall prepare and implement a photometric lighting plan demonstrating compliance with City Standards with regard to light and glare.
BR-1	**Biological Resources: Mitigation for Potential Impacts to Special Status Bird Species** 1. <u>Avoidance:</u> If feasible, any vegetation removal within the project area shall take place between September 1 and February 1 to avoid impacts to nesting birds in compliance with the Migratory Bird Treaty Act (MBTA). No surveys well be required if project timing occurs outside of the bird breeding season. If vegetation removal or building demolition must occur during the nesting season, project construction may be delayed due to actively nesting birds and their required protective buffers. 2. <u>Pre-construction Surveys:</u> a. If construction is to begin during the nesting season (February 1 through August 31), a qualified biologist shall conduct a pre-construction survey within 14 days prior to initiation of disturbance activities. This survey will search for nest sites on buildings and in trees, bushes, or grass within the project area.

	b. Surveys for burrowing owl will occur within 14 days prior to any ground disturbance, no matter the season. This survey will cover potential burrowing owl burrows in the project area and suitable habitat within 150 m (500 ft). Evaluation of use by owls shall be in accordance with California Department of Fish and Wildlife survey guidelines (CBOC 1993, CDFG 1995, CDFG 2012). Surveys will document if burrowing owls are nesting or using habitat in or directly adjacent to the project area. Survey results will be valid only for the season (breeding (Feb 1-Aug 31) or non-breeding (Sept 1-Jan 31) during which the survey is conducted. c. If the pre-construction survey does not detect any active nests or burrows, then no further action is required. If the survey does detect an active nest or burrow, then the District shall implement the following mitigation measures. 3. <u>Minimization/Establish Buffers:</u> a. If any active nests are discovered (and if construction will occur during bird breeding season), the District shall contact the United States Fish and Wildlife Service and/or California Department of Fish and Wildlife to determine protective measures required to avoid take. These measures could include fencing an area where a nest occurs or shifting construction work temporally or spatially away from the nesting birds. Biologists would be required on site to monitor construction activity while protected migratory birds are nesting in the project area. If an active nest is found after the completion of the pre-construction surveys and after construction begins, all construction activities shall stop until a qualified biologist has evaluated the nest and erected the appropriate buffer around the nest. b. If burrowing owls are detected within the survey area, CDFW will be consulted to determine the suitable buffer. These buffers will take into account the level of disturbance of the project activity, existing disturbance of the site (vehicle traffic, humans, pets, etc.), and time of year (nesting vs. wintering). If avoidance is not feasible, the District will work with CDFW to determine appropriate mitigation, such as passive exclusion or translocation, and associated mitigation land offset (CDFG 2012).
CR-1	**Cultural Resources: Subsurface Archaeological Resources** If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the District on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with § 15064.5 of the CEQA Guidelines. If the resources are determined to be unique historical resources as defined under § 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to an appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.

CR-2	**Cultural Resources: Subsurface Historical Resources** In the event that subsurface prehistoric archaeological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archaeologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with § 15064.5 of the CEQA Guidelines. If the resources are determined to be unique prehistoric archaeological resources as defined under § 15064.5 of the CEQA Guidelines, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any prehistoric archaeological artifacts recovered as a result of mitigation shall be provided to a appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.
CR-3	**Cultural Resources: Human Remains** In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) § 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC § 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC § 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.
GEO-1	**Geology and Soils: Subsurface Paleontological Resources** In the event that unique paleontological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified paleontologist shall be consulted to determine whether the resource requires further study. The qualified paleontologist shall make recommendations to the District on the measures that shall be implemented to protect the discovered resources, including but not limited to, excavation of the finds and evaluation of the finds. If the resources are determined to be significant, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any paleontological resources recovered as a result of mitigation shall be provided to an appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.

	Noise: Mitigation for Construction Noise
N-1	Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the daytime hours of 7:00 a.m. and 9:00 p.m. Construction activities shall be prohibited on Sundays and legal holidays.
N-2	Stationary construction equipment (e.g., portable power generators) should be located at the furthest distance possible from nearby residences. If deemed necessary, portable noise barriers shall be erected sufficient to shield nearby residences from direct line-of-sight of stationary construction equipment.
N-3	Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
N-4	When not in use, motorized construction equipment shall not be left idling for periods greater than 5 minutes.
	Traffic: Mitigation for Increased Traffic Generated by Project
T-1	The District shall be responsible for contributing its fair share towards the necessary improvements to the Freedom Parkway / Cougar Drive intersection, as identified in the Traffic Impact Analysis (Initial Study Appendix F). The fair share contribution percentages is shown as 4.29% in Appendix F, Table IX).
T-2	The Project shall install signage at the exit only Project Driveway to Buckhorn Drive to assist drivers. Such signage could include "DO NOT ENTER" signs (R5-1) on the northern and southern point of the Project driveway facing northbound toward southbound traffic and southbound toward northbound traffic on Buckhorn Drive.
T-3	The Project shall install a 4-foot wide walkway in place of the park strip located adjacent to the proposed access to Falcon Drive to the east. In addition, the Project shall install a minimum 8-foot wide crosswalk at Buckhorn Drive north of Falcon drive in line with the southern limits of the concrete paving. These on-site improvements will help minimize conflicts between pedestrians and vehicles traveling through the parking lot, thus improving pedestrian safety.
T-4	The Project shall ensure that there are no obstructions within the corner sight distance of 150 feet greater than two (2) feet above the street grade for vehicles approaching north and south along Buckhorn Drive at the Project driveway and for vehicles approaching east and west along Falcon Drive at the Project driveway.

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A. Project Background Information

1. Project Title, Lead Agency, and Lead Agency Contact Information

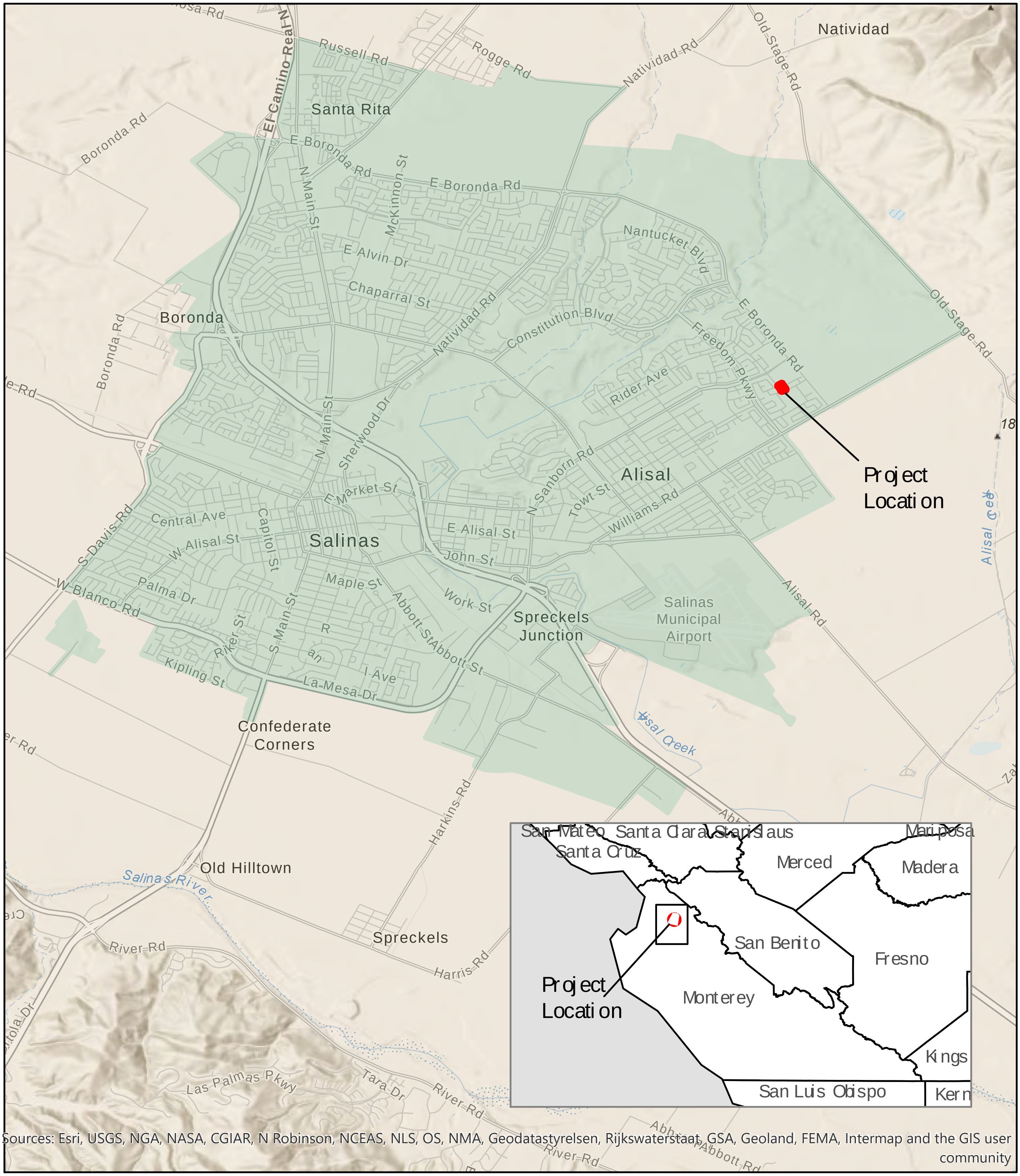
Project Title:	Early Childhood Development Center Project
Lead Agency and Project Sponsor's Name and Address:	Alisal Union School District 155 Bardin Road, Salinas, CA 93905
Contact Information:	Jim Koenig, Associate Superintendent, Business Services Phone: (831) 753-5700, ext. 2033 Email: jim.koenig@alisal.org

2. Project Location and Description

The Early Childhood Development Center Project (Project) is proposed for the northeast corner of Buckhorn Drive and Falcon Drive in the City of Salinas. The Project includes the acquisition of an 0.8-acre parcel from the City of Salinas and the construction of a one-story building housing five classrooms, a 22-stall parking lot, and a playground. The school will be designed to accommodate up to 90 preschool children and employ 15 staff and faculty members. The hours of operation will be 7:30 a.m. to 3:30 p.m., Monday through Friday, year-round. There will be no evening activities.

TABLE A-1
Project Location

City	City of Salinas
County	Monterey
Zip Code	93905
Assessor's Parcel Number	153-641-024-000
Situs	No situs
Nearest Existing Major Cross Streets	Buckhorn and Falcon Drives
Elevation	Approximately 133 ft. MSL
USGS Map	Natividad Quadrangle
Section, Township & Range	Portion of the Sausal Land Grant
Latitude/Longitude	36°41'28.90"N 120°35'47.70"W



Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

Project Location

Figure 1

Buckhorn Preschool Project
Alisal Union School District

ODELL Planning & Research, Inc.
Environmental Planning • School Facility Planning • Demographics

0 0.25 0.5 1 1.5 2 Miles

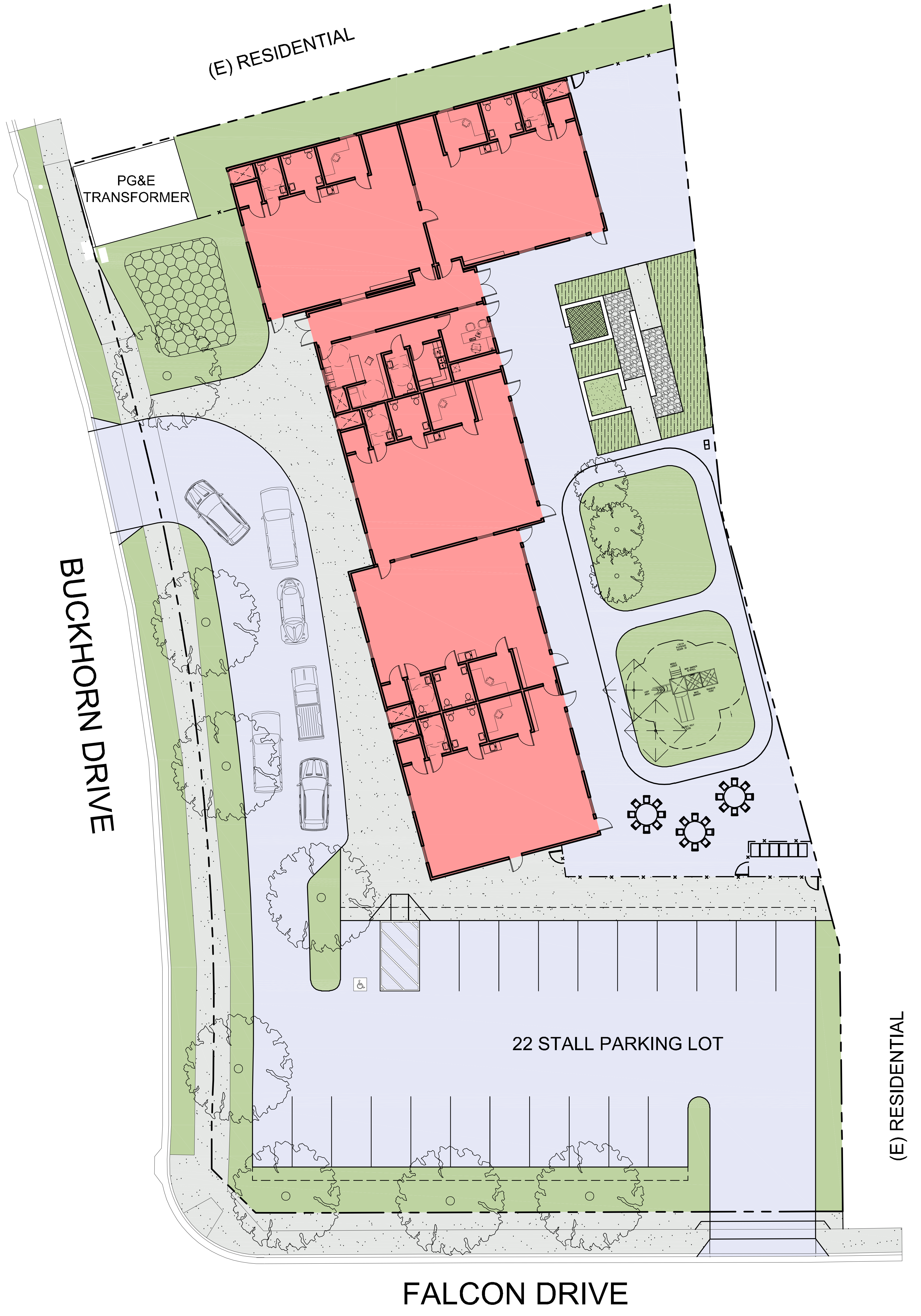
N

Project Site

Figure 2

Buckhorn Preschool Project
Alisal Union School District

ODELL Planning & Research, Inc.
Environmental Planning • School Facility Planning • Demographics



① SITE PLAN
SCALE : 1/16" = 1'-0"
16 0 16 32 FEET

TRUE NORTH
N

LEGEND

- 🟥 NEW BUILDING - 8,200 SF
- 🟩 LANDSCAPE AREA
- ▨ CONCRETE PAVING
- ☐ ASPHALT PAVING

VICINITY MAP
N

IN STUDIO ARCHITECTURE
250 MAIN STREET
SALINAS, CA 93901
831.320.2655

DATES

ALEX REYNOSO
No. C 29184
Exp. 02/28/19
PLANNING

CLIENT

ALISAL UNION SCHOOL DISTRICT

PROJECT

EARLY CHILD DEVELOPMENT CENTER

1081 BUCKHORN DRIVE
SALINAS, CA 93905

SHEET

SITE PLAN

PROJECT NUMBER: 1808
ISSUED: 11-08-2018
DRAWN BY: AR/MLR/EV
CHECKED BY:
FILENAME:

A1.0

3. Actions Required to Implement Project

The Alisal Union School District must undertake the following actions in order to implement the project:

- Complete the California Environmental Quality Act process for the project. This would involve either the adoption of a mitigated negative declaration for the project or the preparation of an environmental impact report. Based on the results of this Initial Study, the District should consider the adoption of a mitigated negative declaration for the project;
- Adopt and implement the Mitigation Monitoring and Reporting Program identified in Section F of this Initial Study;
- Approve the Project;
- Secure approvals, permits, and agreements, as necessary, from agencies and utilities that are responsible for public facilities the project would construct, modify, or otherwise affect within or near the school site.

4. Project Schedule

Alisal Union School District anticipates that construction will begin in February 2020 and be completed in August 2020.

5. Project Setting

a. Existing Land Uses

The proposed project site is currently a vacant lot. Surrounding land uses include single family homes, multi-family homes, a ponding basin, and a joint use park/athletic field for Dr. Oscar F. Loya Elementary School.

b. Public Land Use Policy

The Salinas General Plan provides adopted public land use policy for the existing school site and vicinity. The project site is designated as Public/Semipublic. Surrounding land use designations include Residential Low Density, Residential Medium Density, Park, and Retail.

c. Zoning

The Salinas Municipal Code Zoning Ordinance designation for the existing school site is Public/Semipublic (PS). The site is surrounded by Residential Medium Density (R-M-3.6) to the east and west, Commercial Retail (CR) to the north, and Park (P) to the south. Other land use designations in the vicinity include Residential Low Density (R-L-5.5) and Residential High Density (R-H 2.1).

d. Streets and Highways

The project site is accessible by Buckhorn Drive along the western side of the site, and by Falcon Drive along the southern side of the site.

(Please see Section E, 17, for additional information on streets and highways.)

e. Public Utilities and Services

Water and Sewer: Water service for the school is provided by Alco Water Service and wastewater treatment would be provided by Monterey One Water. The location and design of the water and sewer facilities would be subject to review and approval by Alco Water Service, the City of Salinas and Monterey One Water. The site is a vacant lot in a fully developed urban area, thus water and sewer lines are adjacent to the site.

Storm Water Drainage: The City of Salinas would be the storm water drainage services provider for the project. The location and design of storm water facilities would be subject to review and approval by the City of Salinas.

Solid Waste: Republic Services of Salinas is the waste hauler that will serve the site. The Salinas Valley Solid Waste Authority provides recycling and landfill service to the site.

The Salinas Police Department provides law enforcement services for the City of Salinas in which the proposed project is situated. The Salinas Fire Department provides fire protection services.

(Please see Section E, 15 and E, 19, for additional information on Public Services and Utilities.)

6. Request for Preliminary Comment

Alisal Union distributed a Request for Preliminary Comment for the proposed school project to agencies that might have an interest in the project. The Request provided an opportunity for the agencies to comment on the potential environmental effects of the project, including whether an Environmental Impact Report, Mitigated Negative Declaration, or Negative Declaration should be prepared for the project. Alisal Union also sent the Request to residents and property owners in the project vicinity.

No comments were received from any agencies, property owners or residents, except for a letter from the Ohlone/Costanoan-Esselen Nation (OCEN). This letter is discussed in Sections E,5 (Cultural Resources) and E, 18 (Tribal Cultural Resources) and is included in Appendix C.

7. Other Public Agencies Whose Approval is Required

Implementation of the proposed school project would require approvals from the following public agencies in addition to the District:

TABLE A-2
Responsible Agencies

Public Agency	Approval(s)
California Department of Education, School Facilities Planning Division	Review and approve proposed school for conformance with applicable state rules and regulations governing the siting of public schools
California Department of Toxic Substances Control	Review and approve compliance with Education Code **§** 17210 and **§** 17213.1
City of Salinas	Review and approve the location, design, and construction of street, water, sewer, drainage improvements
Alco Water Service	Review and approve the location, design, and construction of water improvements

B. Environmental Factors Potentially Affected

Based on the evaluations in Section E, the project would have a less than significant impact on the environmental factors listed in the following table. Those factors that require mitigation to be incorporated into the project to be less than significant are noted with an "X".

Table B-1
Environmental Factors Potentially Affected

X	Aesthetics		Agricultural & Forestry Resources		Air Quality
X	Biological Resources	X	Cultural Resources		Energy
X	Geology & Soils		Greenhouse Gas Emissions		Hazards & Hazardous Materials
	Hydrology & Water Quality		Land Use & Planning		Mineral Resources
X	Noise		Population & Housing		Public Services
	Recreation	X	Transportation	X	Tribal Cultural Resources
	Utilities & Service Systems		Wildfire	X	Mandatory Findings of Significance

C. Determination

Based on this Initial Study, I find that the Early Childhood Development Center Project could have significant effects on the environment but by incorporating into the project the mitigation measures identified in Section E, the Alisal Union School District would avoid or render them insignificant.

James R Koenig
Signature

June 17, 2019
Date

James R. Koenig Jr
Print Name

Associate Superintendent
Title

D. Evaluation of Environmental Impacts

1. State CEQA Guidelines Appendix G: Environmental Checklist Form

Section E in this Initial Study address all of the environmental issues that Appendix G in the State CEQA Guidelines suggests an Initial Study should address. In addition, it addresses several environmental issues that the California Department of Education requires be considered in the evaluation of a school site.

The discussion of each impact in Section E concludes with a determination that the impact is potentially significant, less than significant with mitigation, less than significant, or does not involve any impact (no impact).

The "potentially significant" determination is applied if there is substantial evidence that an effect may be significant. Under the State CEQA Guidelines, a significant effect, or impact, on the environment means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. (sec. 15382) The District must prepare an Environmental Impact Report for the project if the Initial Study identifies one or more potentially significant impacts.

The "less than significant impacts with project level mitigation" determination applies when the incorporation by the District of project-specific mitigation measures in the project would reduce an impact from potentially significant to less than significant. This Initial Study describes each mitigation measure the District has incorporated in the project to reduce potentially significant impacts to a less than significant level.

The "less than significant" determination applies when the project would not result in a significant effect on a resource or condition. The less than significant determination used only in cases where no mitigation measures are required to reduce an impact to a less than significant level.

The "no impact" determination applies when the project would have no impact on a resource or condition, or the resource or condition does not apply to the project or its location. The no impact determination is used only in cases where no mitigation measures are required to avoid or eliminate an impact.

The discussion of impacts in this Initial Study lists each potential impact as stated in Appendix G, provides an analysis of the impact, describes each mitigation measure required to avoid the impact or reduce it to an insignificant level, and concludes with a determination of the level of significance of the impact. References to documents that would provide background information on an impact are provided where applicable

This Initial Study incorporates by reference all documents and other sources of information cited in Section E and Section H (Sources Consulted).

2. Existing Laws, Regulations and Policies

Introduction: In some cases, an impact that might appear significant is determined to be less than significant because it is subject to state, regional, or local laws, regulations, or policies, the application of which would reduce the impact to a less than significant level or avoid the impact entirely. In evaluating impacts, this Initial Study considered the applicable laws, regulations, and policies to determine the effect they would have on preventing or reducing potentially significant impacts. The Initial Study, however, does not cite them as mitigation measures because they would apply to the project regardless of the outcome of the Initial Study.

For the proposed project, applicable laws, regulations, and policies include but are not limited to the following:

State of California: The selection and approval of a site for a public school in California is subject to numerous state rules and regulations, most of which the California Department of Education administers to protect the health and safety of students and staff at the school. Before the Department of Education will approve a school site and the school becomes eligible for state funding, a school district must certify that "the proposed site is suitable for educational purposes and is free, or will be free prior to occupancy, from hazards that could be considered harmful to student and staff health and safety. The school district has complied with and will comply with all applicable laws and policies associated with the acquisition of the school site, including commitments for Department of Toxic

Substances Control required activities…" (SFPD 4.03, 2). The state requirements include the items listed below, but it is important to note that these items are most applicable to the establishment of new school sites rather than improvements to existing school sites.

- *Education Code Section 17210-17224:* Specifies the environmental review process the Department of Toxic Substance Control (DTSC) administers for new school sites. DTSC ensures that proposed school sites are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school. All proposed school sites that will receive State funding for acquisition or construction are required to go through a rigorous environmental review and cleanup process under DTSC's oversight.
- *Education Code Section 17212.5; California Code of Regulations, Title 5, Section 14010 Geological and Other Environmental Hazards Report:* District must prepare a Geological Hazards Report and other environmental hazards report as described in Appendix H of the *School Site Selection and Approval Guide, 2000 Edition*. This will include a survey of high-pressure pipelines, liquid storage tanks, railroads, airports, electrical transmission lines, and areas subject to flooding, dam inundation, seismic faulting, and liquefaction.
- *Education Code Section 17213, Public Resources Code Section 21151.8; and California Code of Regulations, Title 5, Section 14011[h],[i]; Title 14, Section 15093:* Requires District Board to adopt findings stating: (1) the proposed school site is not a current or former waste disposal site; (2) the site is not a hazardous substance release site; (3) the site does not contain pipelines; and (4) whether a qualified freeway and/or qualified traffic corridor is located within 500 feet of the site. In addition, requires board-adopted findings for hazardous air emitters and hazardous material handlers located within a 1/4 mile of the site.
- *Education Code Section 17215 and California Code of Regulations, Title 21, Division 2.5, Chapter 2.1:* airports: Requires providing a notice to the State Department of Education if a proposed school site is within two nautical miles, measured by air line, of that point on an airport runway or a potential runway included in an airport master plan that is nearest to the site. The Department of Education is required to consult with the Department of Transportation as to the safety of the site in relation to airport operations.
- *Public Resources Code Section 21151.2 and Government Code section 65402[c]:* Require consultation with local Planning Commission to determine compatibility of proposed school site with general plan.
- *Public Resources Code Section 21151.4:* Addresses CEQA consultation requirements for the proposed construction or alteration of a facility within one-quarter mile of school that might reasonably be anticipated to emit or handling of hazardous or acutely hazardous material
- *Title 5, California Code of Regulations, Article 2, Section 14010, Standards for School Site Selection:* The standards address: possible hazards related to power line easements, railroads, airports, major streets, above ground pipelines, underground pipelines, above ground storage tanks, traffic, noise, seismicity, geology, soils, flooding, dam flood inundation, incompatible zoning, and other safety-related factors.
- *Title 24, California Code of Regulations, Part 1 through Part 12:* Specifies the State of California building regulations for public schools. The Division of the State Architect is responsible for administering the regulations.

Monterey Bay Air Resources District
http://mbard.org/

County of Monterey Health Department
http://www.mtyhd.org/index.php/services/environmental-health/general__trashed/

Environmental Health Bureau is responsible for Permitting and inspecting retail food businesses, including school cafeterias, reviewing construction plans and inspection of new and remodeled food facilities, investigating complaints regarding violations involving unsanitary conditions, investigates suspected food borne illnesses, etc.

City of Salinas

- Salinas General Plan
  http://www.ci.salinas.ca.us/services/commdev/generalplan/GeneralPlan.pdf
- Salinas Code of Ordinances
  https://www.municode.com/library/ca/salinas/codes/code_of_ordinances?nodeId=16597
- Standard Specifications, Design standards, and Standard Plans
  http://www.ci.salinas.ca.us/services/engineering/pdf/2008CityStandards.pdf
- Stormwater Management Plan Update
  http://www.ci.salinas.ca.us/services/maintenance/pdf/SWMP%20Update/Table%20of%20Contents%20-%20Ch%20A.pdf

Alisal Union School District

The Alisal Union School District Facilities Master Plan, completed in July 2015, provides guidance and direction for future facilities needs of the District and the costs involved to implement them. It also provides an assessment of existing facilities and prioritizes improvements. Standards and guidelines for school design and construction are also provided in the plan. The plan is available to view at:

https://www.alisal.org/cms/lib/CA02215153/Centricity/Domain/197/FINALREPORT7-17-15small.pdf

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E. Environmental Checklist

(The questions in Sections E, 1-19 are from the State CEQA Guidelines, Appendix G: Environmental Checklist Form, Evaluation of Environmental Impacts).

1. Aesthetics

Except as provided in Public Resources Code § 21099, would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?			✓	
b. Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?			✓	
c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			✓	
d. Create a new source of light and glare that would adversely affect day or nighttime views in the area?		✓		

a.-c. Less Than Significant:

The existing project area and the adjoining land do not constitute a scenic vista, and the project would not block any vistas in the area, scenic or otherwise. The project area is not near any state scenic highways. The General Plan EIR did not identify any scenic resources within or near the project area. The project does not conflict with the site's zoning (Public/Semipublic) or any Salinas General Plan regulations governing scenic quality. Visual reconnaissance of the project site did not identify any scenic resources on or near the project site including, but not limited to, specimen or heritage trees, rock outcroppings, or historic buildings.

Although the project would change the visual character of the site, the proposed project may constitute an improvement over the existing vacant lot. Additionally, educational facilities are common visual elements in an urban setting as is surrounding the site. Schools are typically a common and congruent visual feature within residential areas. Schools designed for predominantly residential neighborhoods typically have classroom and administrative buildings which are visually compatible or congruent with the surrounding community.

d. Less Than Significant with Mitigation:

The project will increase light and glare in its vicinity. Although the project will not operate in the evening. project buildings and parking areas will be lighted in the evening for security. The project lighting would not be unusual within the urban environment surrounding the site. However, to ensure that adjacent land uses are not significantly impacted, the District will demonstrate that it will comply with City of Salinas standards for light and glare by adopting the following measure:

- **Mitigation Measure AE-1:** Prior to the start of construction, the District shall prepare and implement a photometric lighting plan demonstrating compliance with City Standards with regard to light and glare.

2. Agriculture and Forestry Resources

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?				✓
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				✓
c. Conflict with existing zoning for, or cause rezoning of, forestland, timberland, or timberland zoned Timberland Production?				✓
d. Result in the loss of forestland or conversion of forestland to non-forest use?				✓
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?				✓

a.-e. No Impact:

The proposed project site is a vacant lot surrounded by a fully built out residential neighborhood. There is no farmland, forestland, timberland, or Williamson Act land on or near the site.

3. Air Quality

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?			✓	
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality?			✓	
c. Expose sensitive receptors to substantial pollutant concentrations?			✓	
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			✓	

This section is based on the Air Quality & Greenhouse Gas Impact Assessment completed by Ambient Air Quality & Noise Consulting, which can be found in Appendix A.

(Table E-3-1 provides definitions for the air quality terms used in this section.)

a. Less Than Significant:

Consistency with the Air Quality Management Plan (AQMP) is assessed by comparing the proposed growth associated with a proposed project with the population and dwelling unit forecasts adopted by the Association of Monterey Bay Area Governments (AMBAG). These projections are used to generate emission forecasts upon which the AQMP is based. Project's which are consistent with AMBAG's regional forecasts would be considered consistent with the AQMP (MBARD 2017). In addition, projects that would result in a significant increase in emissions, in excess of MBARD significance thresholds, would also be considered to potentially conflict with or obstruct implementation of the AQMP.

The proposed project would not result in a substantial increase in population. Because the project would serve children located within the existing community, substantial increases in regional vehicle miles traveled are not anticipated to occur with project implementation. In addition, the proposed project would not result in a significant increase in emissions. For these reasons, implementation of the proposed project is not anticipated to result in a substantial increase in either direct or indirect emissions that would conflict with or obstruct implementation of the AQMP. This impact is considered less than significant. No mitigation is required.

TABLE E-3-1
Air Quality Definitions

Carbon Monoxide (CO)

A colorless, odorless gas resulting from the incomplete combustion of hydrocarbon fuels. CO interferes with the blood's ability to carry oxygen to the body's tissues and results in numerous adverse health effects. Over 80 percent of the CO emitted in urban areas is contributed by motor vehicles. CO is a criteria air pollutant.

Nitrogen Oxides (Oxides of Nitrogen, NOx)

A general term pertaining to compounds of nitric oxide (NO), nitrogen dioxide (NO2) and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation and acid deposition. NO2 is a criteria air pollutant and may result in numerous adverse health effects.

Particulate Matter (PM)

Any material, except pure water, that exists in the solid or liquid state in the atmosphere. The size of particulate matter can vary from coarse, wind-blown dust particles to fine particle combustion products.

PM2.5

Includes tiny particles with an aerodynamic diameter less than or equal to a nominal 2.5 microns. This fraction of particulate matter penetrates most deeply into the lungs.

PM10 (Particulate Matter)

A criteria air pollutant consisting of small particles with an aerodynamic diameter less than or equal to a nominal 10 microns (about 1/7 the diameter of a single human hair). Their small size allows them to make their way to the air sacs deep within the lungs where they may be deposited and result in adverse health effects. PM10 also causes visibility reduction.

Reactive Organic Gas (ROG)

A photochemically reactive chemical gas, composed of non-methane hydrocarbons, that may contribute to the formation of smog. Also sometimes referred to as Non-Methane Organic Gases (NMOGs). (See also Volatile and Hydrocarbons.)

Sulfur Dioxide (SO_2)

A strong smelling, colorless gas that is formed by the combustion of fossil fuels. Power plants, which may use coal or oil high in sulfur content, can be major sources of SO_2 and other sulfur oxides contribute to the problem of acid deposition. SO_2 is a criteria air pollutant.

Source: California Air Resources Board. *Glossary of Air Pollution Terms* (2015)

b. Less Than Significant:

Construction Emissions

Construction-generated emissions are short-term and of temporary duration, lasting only as long as construction activities occur, but possess the potential to represent a significant air quality impact. The construction of the proposed uses would result in the temporary generation of emissions resulting from site grading and preparation, building construction, asphalt paving, application of architectural coatings, and motor vehicle exhaust associated with construction equipment and on-road vehicle trips. Emissions of PM are largely associated with ground disturbance and the movement of construction vehicles and equipment on unpaved surfaces.

Construction-generated emissions associated with the project development are summarized in Table 5 of Appendix A. As depicted, development of the proposed project would generate maximum daily PM_{10} emissions of approximately 1.4 lbs/day, or less. Emissions of PM would largely occur during grading activities. Construction activities would not generate PM_{10} emissions that would exceed the MBARD's significance threshold of 82 lbs/day. Furthermore, compliance with existing MBARD rules and regulations, such as Rule 402 (Nuisances), Rule 426 (Architectural Coatings), and Rule 425 (Use of Cutback Asphalt) would further minimize potential short-term air quality impacts. As a result, short-term construction activities would be considered to have a less-than-significant air quality impact. No mitigation is required.

Operational Emissions

Daily operational emissions associated with the proposed project are summarized in Table 6 of Appendix A. At buildout, the proposed project would generate approximately 0.5 lbs/day of ROG, 1.3 lbs/day of NO_X, 3.2 lbs/day of CO, less than 0.1 lbs/day of SO_2, 0.4 lbs/day of PM_{10}, and 0.1 lbs/day of $PM_{2.5}$. Operational emissions are projected to decline in future years due primarily to improvements in vehicle efficiency and reductions in energy use-related emissions. Daily operational emissions would not exceed applicable MBARD significance thresholds. Long-term operation of the proposed project would be considered to have a less-than-significant air quality impact. No mitigation is required.

c. Less Than Significant:

With regard to public health and welfare, both the U.S. EPA and the State of California have developed AAQS for various pollutants. These standards define the maximum amount of an air pollutant that can be present in ambient air. An AAQS is generally specified as a concentration averaged over a specific time period, such as one hour, eight hours, 24 hours, or one year. The different averaging times and concentrations are meant to protect against different exposure effects. In general, the standards adopted by the State of California are equivalent to or more health-protective than the national standards established by the U.S. EPA.

To assist local jurisdictions with the evaluation of localized pollutant concentrations and potential health-related impacts, MBARD has developed recommended thresholds of significance and screening criteria for the pollutants of primary concern (e.g., PM_{10}, CO, TACs). Accordingly, project-generated emissions of PM_{10} that exceed 82 pounds per day (lbs/day) could result in a violation of PM_{10} AAQS at nearby receptors, which could result in health-related impacts to nearby receptors. In addition, ground-level concentrations of TACs that would result in an incremental increase in cancer risk of 10 in 1 million or a Hazard Index greater than 1 for the Maximally Exposed Individual would also be considered to result in a potentially significant impact to human health. Projects that contribute to or result in decreased levels of service (LOS) of E, or worse, at signalized intersections may contribute to localized CO concentrations that could exceed AAQS, which may result in health-related impacts to nearby individuals. Other pollutants of localized concern include exposure to naturally-occurring asbestos.

Short-term and long-term pollutants of primary concern with regard to potential health-related impacts include construction-generated emissions of TACs, naturally-occurring asbestos, particulate matter, and carbon monoxide. Short-term and long-term localized air quality impacts are discussed in greater detail, as follows:

Short-term Exposure

Implementation of the proposed project would result in short-term emissions of fugitive PM associated with project construction. Localized pollutants of primary concern typically associated with construction projects are commonly associated with increased emissions of PM generated by ground disturbance, including site preparation and grading. Compliance with applicable MBARD rules and regulations, including, but not limited to, Rule 402 for the control of nuisance–related emissions and Rule 424 for the handling of asbestos-containing building materials, would minimize potential impacts to occupants of nearby land uses. For these reasons, construction activities would be considered to have a less-than-significant short-term impact to nearby sensitive receptors. No mitigation is required.

Long-term Exposure

Implementation of the proposed project would not result in the installation of any major stationary sources of emissions. As a result, CO generated by mobile sources would be considered the primary pollutant of local concern. Mobile-source emissions of CO are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. However, under specific meteorological and operational conditions, such as near areas of heavily congested vehicle traffic, CO concentrations may reach unhealthy levels. If inhaled, CO can be adsorbed easily by the blood stream and can inhibit oxygen delivery to the body, which can cause significant health effects ranging from slight headaches to death. The most serious effects are felt by individuals susceptible to oxygen deficiencies, including people with anemia and those suffering from chronic lung or heart disease. For this reason, localized mobile-source CO concentrations are of potential concern near signalized intersections that experience high traffic volumes/vehicle congestion and are projected to operate at unacceptable levels of service (i.e., LOS E, or worse).

Based on the traffic analysis prepared for the proposed project, intersections in the project area are projected to operate at LOS D, or better during the peak commute hours (Table 7 of Appendix A). In comparison to the CO screening criteria, implementation of the proposed project would not result in or contribute to unacceptable levels of service (i.e., LOS E, or worse) at primarily affected intersections. For this reason and given Monterey County's attainment for CO concentrations, implementation of the proposed project would not result in or contribute to localized mobile-source CO concentrations that would be projected to exceed applicable ambient air quality standards. This impact would be considered less than significant. No mitigation is required.

d. Less Than Significant:

Implementation of the proposed project would not result in the installation of any major sources of odors. In addition, no major sources of odors have been identified in the vicinity of the project site. As a result, implementation of the proposed project would not result in the long-term exposure of individuals to increased concentrations of odors. However, construction of the proposed facilities would involve the use of a variety of gasoline or diesel-powered equipment that would emit exhaust fumes. Exhaust fumes, particularly diesel-exhaust, may be considered objectionable by some people. In addition, pavement coatings and architectural coatings used during project construction would also emit temporary odors. However, construction-generated emissions would occur intermittently and would dissipate rapidly within increasing distance from the source. As a result, short-term construction activities would not expose a substantial number of people to frequent odorous emissions. For these reasons, this impact would be considered less than significant. No mitigation is required.

4. Biological Resources

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U. S. Fish and Wildlife Service?		✓		
b. Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U. S. Wildlife Service?				✓
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				✓
d. Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?				✓
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				✓
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				✓

a. Less Than Significant:

Satellite imagery indicates that the proposed school site has been graded and clear of vegetation since at least 2004 and the surrounding neighborhood is fully built-out.

The direct impacts of the proposed school will be possible direct mortality for any animals in the path of construction equipment. Direct mortality could occur to common fossorial or slow-moving mammals and reptiles within the project area.

Assessment Methods

A background search and literature review of all existing data pertaining to biological resources within the area was conducted. This included searching *California Natural Diversity Data Base* and the U.S. Fish and Wildlife Service *IPaC Trust Resource List* (see Appendix C), other available CEQA/NEPA documents, maps, and photographs. From this review, a list of potentially occurring special status species was compiled for the project (see Appendices). Special status biological resources include special-status plant and wildlife species (including State or Federally designated, rare, threatened, endangered, Migratory Bird Treaty Act species, species of concern, or unique species); potential wetland/riparian habitats; sensitive plant communities; and other environmentally sensitive habitat areas.

Database queries indicated 19 species with special status occur or have historically occurred within the project area. Many of the species from the generated list either were historic, extirpated occurrences, or were species with very specialized habitat requirements that were not present on the site or within the vicinity. Due to the highly disturbed, altered state of the site, none of the plant species are expected to occur. This area has been disturbed for many years, and is surrounded by urban development, and has very sparse vegetation (grasses). Therefore, the habitat present is likely unsuitable for special-status species. As a result, all of the special-status species were "ruled out". Additionally, there are 14 migratory birds protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act which could potentially exist within the project vicinity.

Special Status Birds

Migratory birds could be nesting in the project vicinity, most of which are protected by the Migratory Bird Treaty Act (USCA 1918). Birds may nest on buildings, on the ground, or in vegetation in the project vicinity. Construction-related disturbance could result in nest abandonment or direct mortality of eggs, chicks, and/or fledglings. This type of impact to migratory birds, including special status bird species, would be considered take under the MBTA and CESA, and therefore, is a potentially significant impact. In order to avoid impacts to avian species, nests and nesting habitat should not be disturbed or destroyed. This type of impact to migratory birds, including special status bird species, would constitute take under the Migratory Bird Treaty Act and the California Endangered Species Act, and therefore, is a potentially significant impact. Based on the District incorporating Mitigation Measures BR-1 in the project, the impacts would be less than significant with mitigation incorporated.

Mitigation Measure BR-1:

1. <u>Avoidance:</u> If feasible, any vegetation removal within the project area shall take place between September 1 and February 1 to avoid impacts to nesting birds in compliance with the Migratory Bird Treaty Act (MBTA). No surveys will be required if project timing occurs outside the bird breeding season. If vegetation removal must occur during the nesting season, project construction may be delayed due to actively nesting birds and their required protective buffers.

2. <u>Pre-construction Surveys:</u>
    a. If construction is to begin during the nesting season (February 1 through August 31), a qualified biologist shall conduct a pre-construction survey within 14 days prior to initiation of disturbance activities. This survey will search for nest sites on buildings and in trees, bushes, or grass within the project area.
    b. Surveys for burrowing owl will occur within 14 days prior to any ground disturbance, no matter the season. This survey will cover potential burrowing owl burrows in the project area and suitable habitat within 150 m (500 ft). Evaluation of use by owls shall be in accordance with California Department of Fish and Wildlife survey guidelines (CBOC 1993, CDFG 1995, CDFG

2012). Surveys will document if burrowing owls are nesting or using habitat in or directly adjacent to the project area. Survey results will be valid only for the season (breeding (Feb 1-Aug 31) or non-breeding (Sept 1-Jan 31) during which the survey is conducted.

c. If the pre-construction survey does not detect any active nests or burrows, then no further action is required. If the survey does detect an active nest or burrow, then the District shall implement the following mitigation measures.

3. Minimization/Establish Buffers:

   a. If any active nests are discovered (and if construction will occur during bird breeding season), the District shall contact the United States Fish and Wildlife Service and/or California Department of Fish and Wildlife to determine protective measures required to avoid take. These measures could include fencing an area where a nest occurs or shifting construction work temporally or spatially away from the nesting birds. Biologists would be required on site to monitor construction activity while protected migratory birds are nesting in the project area. If an active nest is found after the completion of the pre-construction surveys and after construction begins, all construction activities shall stop until a qualified biologist has evaluated the nest and erected the appropriate buffer around the nest.
   b. If burrowing owls are detected within the survey area, CDFW will be consulted to determine the suitable buffer. These buffers will take into account the level of disturbance of the project activity, existing disturbance of the site (vehicle traffic, humans, pets, etc.), and time of year (nesting vs. wintering). If avoidance is not feasible, the District will work with CDFW to determine appropriate mitigation, such as passive exclusion or translocation, and associated mitigation land offset (CDFG 2012).

b.-f. No Impact:

There are no riparian or sensitive natural communities within the project area. There are no federally protected wetlands within the project area. The site does not constitute a “movement corridor” for native wildlife that would attract wildlife to move through the site any more than the surrounding developed lands. The project site is bordered by residential development and busy streets, which restricts access for wildlife.

The project appears to be consistent with relevant biological resources policies of the City of Salinas and would not conflict with local policies or ordinances protecting biological resources (Salinas General Plan EIR).

The City of Salinas is not part of any HCP or NCCP, so the project would not conflict any provisions of any local, regional, or state habitat conservation plan.

5. Cultural Resources

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to State CEQA Guidelines § 15064.5?		✓		

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines § 15064.5?		✓		
c. Disturb any human remains, including those interred outside of formal cemeteries?		✓		

a.-c. Less Than Significant with Mitigation:

No historical or archaeological resources are evident on the surface of the land. The Cultural Resources Background Record Search for the Salinas General Plan EIR did not identify any previously recorded historic or archaeological resources in the vicinity of the project site.

A California Historical Resources Information System (CHRIS) records search (see Appendix C) revealed that a cultural resource study that includes the project site and a larger surrounding area was completed in 1986. The study indicated that there is no record of archaeological resources, and no listed resources, landmarks, historic places, or points of historical interest. The CHRIS letter indicated that "there is a low possibility of identifying Native American and historic-period archaeological resources and further study is not recommended at this time". A Native American Heritage Commission (NAHC) Sacred Lands File search was conducted (see Appendix C), which did not identify any known areas of concern in the NAHC inventory.

Notification of tribes pursuant to AB52 and the resulting response from the Ohlone/Costanoan-Esselen Nation (OCEN) (see Appendix C) is addressed under Section E,19, Tribal Cultural Resources.

Although no historic, archaeological or human remains were evident on the project land surface, in the event that subsurface resources are discovered during construction, the following mitigation measures shall apply:

- **Mitigation Measure CR-1:** If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the District on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with § 15064.5 of the CEQA Guidelines.

  If the resources are determined to be unique historical resources as defined under § 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds.

  No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to an appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.

- **Mitigation Measure CR-2:** In the event that subsurface prehistoric archaeological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archaeologist shall make recommendations to the

City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with § 15064.5 of the CEQA Guidelines. If the resources are determined to be unique prehistoric archaeological resources as defined under § 15064.5 of the CEQA Guidelines, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any prehistoric archaeological artifacts recovered as a result of mitigation shall be provided to a appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.

- **Mitigation Measure CR-3:** In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) § 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC § 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC § 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

6. Energy Resources

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			✓	
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			✓	

a.-b. Less Than Significant:

The plans for all public school projects in California must be submitted to the Division of the State Architect (DSA) for plan review and must comply with DSA and California Energy Commission (CEC) requirements.

These requirements ensure that schools, including the proposed project by Alisal Union, would not result in the inefficient, wasteful, or unnecessary consumption of energy.

7. Geology and Soils

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:				
(i) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			✓	
(ii) strong seismic ground shaking?			✓	
(iii) seismic-related ground failure, including liquefaction?			✓	
(iv) landslides?			✓	
b. Result in substantial soil erosion or the loss of topsoil?			✓	
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			✓	
d. Be located on expansive soil, as defined in Table 18-a-B of the Uniform Building Code (1994), creating substantial risks to life or property?			✓	
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				✓

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✓		

a.-d. Less Than Significant:

The project site is not located within the boundaries of an Alquist-Priolo Earthquake Fault Zone, and no active faults are known to traverse the project site. Although the potential for ground rupture is low, ground shaking caused by events on distant and nearby active faults is considered a potential seismic hazard at the project site.

Based on the estimated depths to first encountered groundwater, the potential for liquefaction at the project site is considered low. The project site is relatively flat, with average slope gradients across the site area of less than 1 percent. Therefore, the potential for landslides or failure of natural slopes to affect the project site is low. Surficial soil at the project site consists of loam material with a low to moderate shrink-swell potential. However, the presence or absence of expansive soils should be verified by site-specific sampling and testing of on-site materials as part of a site-specific geotechnical studies. (Padre 2017)

The site is located in a developed urban area and there is no evidence or information indicating the characteristics of the soils on the project are significantly problematic for building (Salinas General Plan EIR).

As a standard part of the school project design process, the District would retain a qualified consultant to prepare the site-specific subsurface exploration and geotechnical analyses. The design parameters identified in the analyses would be subject to review and approval by California Division of the State Architect, and the District would incorporate any geotechnical recommendations in the project design.

The potential for water-or wind-borne erosion and loss of topsoil would be low during the construction phase of the proposed project because the project site will require minimal clearing, grubbing, and grading. Once construction is completed, the potential for erosion would be minimal because the ground would be covered by buildings, hard surfaces, and landscaping. Because the project site is less than one acre, the project would not be subject to the requirements of the State Water Quality Control Board but would be subject to the requirements of the Monterey Bay Air Pollution Control District.

e. No Impact:

The project site is served by the City of Salinas sewer system. The proposed project would not involve the use of septic tanks or alternative wastewater disposal systems.

f. Less Than Significant with Mitigation:

No paleontological resources or unique geological features are evident on the surface of the land. The Monterey County General Plan EIR indicates that fossils are found throughout the County because of widespread distribution of marine deposits but no sites of significant scientific value were located in the vicinity of the City of Salinas. Nevertheless, subsurface paleontological resources could be present, and the following mitigation measure addresses the potential discovery of subsurface resources.

- **Mitigation Measure GEO-1:** In the event that unique paleontological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified paleontologist shall be consulted to determine whether the resource requires further study. The qualified paleontologist shall make recommendations to the District on the measures that shall be implemented to protect the discovered resources, including but not limited to, excavation of the finds and evaluation of the finds. If the resources are determined to be significant, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any paleontological resources recovered as a result of mitigation shall be provided to an appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.

8. Greenhouse Gas Emissions

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?			✓	

This section is based on the Air Quality & Greenhouse Gas Impact Assessment completed by Ambient Air Quality & Noise Consulting, which can be found in Appendix A.

a. & b. Less Than Significant:

Short-term Construction GHG Emissions

Estimated GHG emissions associated with construction are summarized in Table 9 of Appendix A. Based on the modeling conducted, annual emissions of greenhouse gases associated with construction of the proposed project would be approximately 69.1 $MTCO_2e$. Amortized GHG emissions, when averaged over an assumed 25-year life of the project, would total approximately 2.8 $MTCO_2e$/year. There would also be a small amount of GHG emissions from waste generated during construction; however, this amount is speculative. Actual emissions may vary, depending on the final construction schedules, equipment required, and activities conducted.

Long-term Operational GHG Emissions

Operational GHG emissions associated with buildout of the proposed project for year 2020 are summarized in Table 10 of Appendix A.

As depicted in Table 10 of Appendix A, operational emissions associated with the proposed development would generate approximately 105.8 $MTCO_2e$/year. With the inclusion of amortized construction-generated emissions, overall net increases of GHG emissions would be approximately 108.6 $MTCO_2e$/year under year 2020 operational conditions (refer to Table 10 of Appendix A). Project-generated GHG emissions are projected to decrease in future years due largely to improvements in energy-efficiency and vehicle fleet emissions. At buildout, mobile sources are projected to account for roughly 74 percent of the total operational GHG emissions. Approximately 18 percent of the project's total operational GHGs would be associated with energy use. The remaining emissions would be associated with area sources, water use, and waste generation.

As noted in Table 10 of Appendix A, annual GHG emissions would not exceed the mass-emission GHG significance threshold of 1,100 $MTCO_2e$ or the GHG-efficiency significance threshold of 4.9 $MTCO_2e$/year. As a result, the proposed project would not result in GHG emissions that would have a significant impact on the environment, nor would the proposed project conflict with applicable GHG-reduction plans, policies or regulations. This impact would be considered less than significant. No mitigation is required.

9. Hazards and Hazardous Materials

Would the project:	**Potentially Significant Impact**	**Less Than Significant Impact with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			✓	
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			✓	
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			✓	
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				✓
e. For a project located within 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 result in a safety hazard for people residing or working in the project area?			✓	
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				✓
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?				✓

a.-c. Less Than Significant:

Construction of the project would involve the transport and use of fuels, lubricants, greases, solvents, architectural coatings including paints. Operation of the project would involve hazardous materials used for cleaning and maintenance purposes: cleansers, solvents, paints, pesticides, and fertilizers.

The school would be subject to state and local regulations governing the routine transport, use, and disposal of hazardous materials and the release of hazardous materials into the environment.

In addition, the California Education Code requires that the school site undergo an environmental review process overseen by the California Department of Toxic Substances Control (DTSC). The purpose of the process is to determine if a release or threatened release of any hazardous materials found on the proposed site or presence of any naturally occurring hazardous materials on the site present a risk to human health or the environment. The District, working with DTSC, must identify and implement measures that would mitigate any hazardous conditions before the California Department of Education would approve the project and provide funding for the project. (Education Code sections 17210, 17210.1, 17213.1, and 17213.2) The Preliminary Environmental Assessment (PEA) completed for the project evaluated the presence of pesticides (chlordane, DDD, DDE, DDT, dieldrin, and toxaphene) and metals (arsenic). The PEA determined that the concentrations present on the project site did not pose a threat to human health and further assessment and/or remediation is not warranted.

d. No Impact:

A review of the California Department of Toxic Substances Control's EnviroStor web site did not result in the identification of any hazardous materials sites within the vicinity of the project site.

e. Less Than Significant:

The project site is within 2 nautical miles the Salinas Municipal Airport but is not within the 1982 Salinas Municipal Airport Land Use Plan Area of Influence.

The Monterey County Airport Land Use Commission reviewed the proposed project and determined that the proposed site is consistent with applicable policies and planning guidelines, and that compatibility issues are not likely to occur.

The California Department of Transportation (Caltrans), Division of Aeronautics, conducted an aeronautical review for the proposed project. Caltrans concluded that there was a low risk of an accident occurring at the site and had no objections to the project proceeding.

f. No Impact:

All schools have emergency response/evacuation plans. Research conducted for this Initial Study did not identify any adopted emergency response plans or emergency evacuation plans the project could impair. The project does not conflict with the Salinas General Plan Safety Element or the Monterey County Multi-Jurisdictional Hazard Mitigation Plan.

g. No Impact:

The project site is in an urban area and not within an area subject to high wildland fire risk (CalFire). (See Section E, 20 for additional information on wildfire risk.)

10. Hydrology and Water Quality

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?			✓	
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			✓	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:				
(i) result in a substantial erosion or siltation on- or off-site;				✓
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or off-site?			✓	
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional resources of polluted runoff; or			✓	
(iv) impede or redirect flood flows?				✓
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				✓
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				✓

a.-c. Less Than Significant:

The Alco Water Service water supply and Monterey Regional Water Pollution Control Agency wastewater treatment systems will serve the proposed project site. The water supply system complies with applicable water quality standards and the wastewater discharge system complies with applicable waste discharge requirements. The design and operational characteristics of the project related to water and wastewater would not incrementally or directly cause the existing systems to violate the applicable requirements.

The proposed project would use of a minor amount of water for construction, domestic, and landscape irrigation purposes. The project site is less than an acre in size, located in a developed urban area and planned and zoned for public/semipublic use. As such, the water use for the project site was anticipated in water supply planning for the area and would not have an appreciable effect on water supply or groundwater use.

No streams or rivers exist on or near the project site. The project site is generally flat and will be covered with buildings, hardscape, and landscaping, which will not result in erosion. The project is within a developed urban area and designated in the general plan for public/semipublic uses. As such, drainage infrastructure was planned to accommodate the proposed use and would not be appreciably affected.

The City of Salinas is responsible for managing urban stormwater runoff within the City of Salinas in accordance with its National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater permit from the Central Coast Water Board Dischargers whose projects disturb fewer than one acre of soil are not required to develop a Stormwater Pollution Prevention Plan (SWPPP). However, the District will comply with any applicable Best Management Practice requirements of the City of Salinas for the prevention of pollution from construction-related or operational runoff, as well as requirements for the design, construction, and operation of on-and-off site stormwater improvements necessary to serve the project.

d. No Impact:

The following analysis is based on the Geologic Hazards Evaluation prepared for the project and included as Appendix D.

The proposed project site is not a 100-year flood plain, as mapped on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, *Community Panel Number: 06053C0228G, Effective Date April 2, 2009*. The project site is mapped as being located in Zone X - areas of 0.2% (500-yr) annual chance flood; areas of 1% (100-year) annual chance flood with depths of less than 1 foot or with drainage areas less than one square mile; and areas protected by levees from 1% annual chance flood.

The project site is located approximately 12 miles inland from the Pacific Ocean and greater than 20 miles from the nearest reservoir of significant size. Therefore, the potential for a tsunami and/or seiche to affect the project site is considered low.

Catastrophic failure of dams is rare and is most likely to occur following significant seismic events. The nearest dams of significant size are Nacimiento Dam (Lake Nacimiento) and San Antonio Dam (Lake San Antonio). Both dams are located more than 70 miles southeast of Salinas. They both drain into the Salinas River approximately 6 miles of the project site. According to the dam Inundation Map for Monterey County dated January 2010, in the event that either of these dams fail, the project site is located outside the limits of inundation.

e. No Impact:

The Sustainable Groundwater Management Act of 2014 (SGMA) requires the formation of local Groundwater Sustainability Agencies (GSAs) that are responsible for developing Groundwater Sustainability Plans (GSPs). The project site is located within jurisdiction of the Salinas Valley Basin Groundwater Sustainability Agency. This agency has not yet developed a GSP.

11. Land Use and Planning

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Physically divide an established community?				✓
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				✓

a.-b. No Impact:

The Salinas General Plan and the Salinas Zoning Ordinance both designate the project site as Public/Semipublic, which is appropriate land use and zoning for a school. The project site is less than an acre and the project will integrate well into the existing neighborhood. Educational facilities for children are typically located in residential neighborhoods and often serve as unifying elements for the neighborhoods.

12. Mineral Resources

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				✓
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				✓

a.-b. No Impact:

The project would not result in the loss of availability of a known mineral resource because no known resources exist on or near the existing school site. Likewise, the project would not result in the loss of availability of a locally important mineral resource recovery site because none exists on or near the existing school site. (Salinas General Plan EIR)

13. Noise

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. 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?		✓		
b. Generation of excessive groundborne vibration or groundborne noise levels?			✓	
c. For a project located within a private airstrip or 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?				✓

a. Less Than Significant with Mitigation:

The Noise Impact Study (Appendix E) indicated that noise generated by the proposed project would occur during short-term construction and long-term operation. Noise-related impacts associated with short-term construction and long-term operations of the proposed project are discussed separately, as follows:

Short-term Construction Noise

Construction noise typically occurs intermittently and varies depending upon the nature or phase (e.g., demolition/land clearing, grading and excavation, erection) of construction. Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Although noise ranges were found to be similar for all construction phases, the initial site preparation phase tended to involve the most equipment.

As noted in Table 6 of Appendix E, instantaneous noise levels (in dBA L_{max}) generated by individual pieces of construction equipment typically range from approximately 80 dBA to 85 dBA L_{max} at 50 feet (FTA 2006). Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Based on typical off-road equipment usage rates, average-hourly noise levels would be approximately 82 dBA L_{eq}, or less, at 50 feet.

The City has not adopted noise standards that apply to short-term construction activities. However, based on screening noise criteria commonly recommended by federal agencies, construction activities would generally be considered to have a potentially significant impact if average-hourly daytime noise levels would exceed 80 dBA L_{eq} at noise-sensitive land uses, such as residential land uses (FTA 2006). Assuming an average-hourly construction noise level of 82 dBA L_{eq} at 50 feet, predicted noise levels at the nearest residence and classroom would be approximately 74 dBA L_{eq} and 55 dBA L_{eq}, respectively. Predicted exterior noise levels would not exceed the exterior noise threshold of 80 dBA L_{eq}.

Interior noise levels of approximately 45 dBA L_{eq} are typically recommended to minimize impacts on speech interference and the learning environment. Based on the predicted exterior noise levels noted above and assuming an average exterior-to-interior noise reduction of 20 dB, predicted interior noise levels within the nearest classroom would be approximately 35 dBA L_{eq}. Predicted interior noise levels of the nearest classroom would not exceed the commonly applied interior noise standard of 45 dBA L_{eq}. With regard to residential land uses, activities occurring during the more noise-sensitive evening and nighttime hours could result in increased levels of annoyance and potential sleep disruption. Because the proposed project does not identify hourly restrictions for noise-generating construction activities, noise-generating construction activities would be considered to have a potentially significant short-term noise impact.

Implementation of the following mitigation measures would limit construction activities to the less noise-sensitive daytime hours, which would reduce potential increases in levels of annoyance and sleep disruption to occupants of nearby residential dwellings. Additional measures, such as limitations on equipment idling and use of equipment exhaust mufflers, would further reduce potential noise impacts to nearby land uses. With mitigation and given that construction-related activities would be short-term, this impact is considered less than significant.

- **Mitigation Measure N-1**: Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the daytime hours of 7:00 a.m. and 9:00 p.m. Construction activities shall be prohibited on Sundays and legal holidays.
- **Mitigation Measure N-2**: Stationary construction equipment (e.g., portable power generators) should be located at the furthest distance possible from nearby residences. If deemed necessary, portable noise barriers shall be erected sufficient to shield nearby residences from direct line-of-sight of stationary construction equipment.
- **Mitigation Measure N-3**: Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
- **Mitigation Measure N-4**: When not in use, motorized construction equipment shall not be left idling for periods greater than 5 minutes.

Long-term Operational Noise

Potential long-term increases in noise associated with the proposed project would be primarily associated with the operation of building equipment, such as heating, ventilation, and air conditioning (HVAC) units, outdoor recreational activities, and vehicle use within onsite parking lots.

Stationary Equipment

The proposed project would not result in the introduction of any new major sources of stationary noise sources. Stationary noise sources would be predominantly associated with the operation of building mechanical equipment. Building mechanical equipment would be located within the structure, enclosed, or placed on rooftop areas away from direct public exposure. In addition, the operation of building mechanical equipment would be predominantly limited to the daytime hours of operations. As a result, significant increases in noise levels associated with onsite building mechanical equipment would not be projected to occur with project implementation. Noise levels associated with stationary equipment operation would be considered to have a less-than-significant impact.

Recreational Facilities

Playground

The project would include the development of a small playground located along the eastern boundary of the project site. The playground would be located adjacent to existing residential land uses. Existing 6-foot noise barriers are located on the eastern property line of the project site adjacent to residential dwellings. The existing barrier would provide an approximate 5 dBA reduction in noise levels.

Noise generated by small playgrounds typically includes elevated children's voices and occasional adult voices. Based on measurement data obtained from similar land uses, noise levels associated with small playgrounds can generate intermittent noise levels of approximately 55-60 dBA L_{eq} at 50 feet. Based on these noise levels and assuming a distance of approximately 20 feet from the source center to the nearest property line with existing noise barriers, predicted average-hourly noise levels at the nearest adjacent residential property lines could reach levels of up to 63 dBA L_{eq}. Based on this noise level and assuming an average usage rate of 4 hours during the daytime hours, predicted average-daily noise levels at the property line of the nearest residences would be approximately 59 dBA CNEL, or less. The proposed playground would not result in a significant increase in ambient noise levels that would exceed the City's noise standard of 60 dBA CNEL at residential land uses located adjacent to the proposed playground. Noise generated by the proposed playground would be considered to have a less-than-significant impact.

Vehicle Parking Areas

The proposed project would include construction of a small parking lot at the southern boundary of the project site, along Falcon Drive. The parking lot would contain approximately 22 spaces. Parking lot noise levels were calculated based on the Federal Transit Administration's Transit Noise & Vibration Impact Assessment guidance for the assessment of parking lot-related noise levels. Assuming that all parking spaces would be used within a one-hour period, predicted noise levels at 10 feet from the parking lot would be less than 35 dBA L_{eq}. As previously noted in Table 2 of Appendix E, ambient daytime noise levels along Falcon Drive generally range around 43 dBA L_{dn}/CNEL. In comparison to ambient noise levels, the proposed parking lot would not result in a substantial increase in ambient noise levels at nearby receptors. Noise generated by the proposed parking area would be considered to have a less-than-significant impact.

Long-term Increases in Traffic Noise

Ambient noise levels in the project area are predominantly influenced by vehicular traffic on area roadways. The FHWA roadway noise prediction model was used to predict traffic noise levels along primarily affected roadway segments. Predicted noise levels were calculated for baseline conditions, with and without implementation of the proposed project, based on traffic volumes obtained from the traffic analysis prepared for this project. Predicted increases in traffic noise levels are summarized in Table 7 of Appendix E.

As noted in Table 7 of Appendix E, implementation of the proposed project would result in increases of approximately 1.6 dBA L_{dn}/CNEL, or less, along area roadways. Implementation of the proposed project would not result in a noticeable increase (i.e., 3 dBA or greater) in ambient noise levels. Increases in traffic noise would be considered to have a less-than-significant impact.

b. Less Than Significant:

Long-term operational activities associated with the proposed project would not involve the use of any equipment or processes that would result in potentially significant levels of ground vibration. Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Construction activities associated with the proposed project would likely require the use of various off-road equipment, such as tractors, concrete mixers, and haul trucks. The use of major groundborne vibration-generating construction equipment, such as pile drivers, would not be required for this project.

Groundborne vibration levels associated with representative construction equipment are summarized in Table 8 of Appendix E. As depicted, ground vibration generated by construction equipment would be approximately 0.08 in/sec ppv, or less, at 25 feet. Predicted vibration levels at the nearest existing structures would not exceed the minimum recommended criteria for structural damage and human annoyance (0.2 in/sec ppv, respectively). As a result, this impact would be considered less than significant.

c. Less Than Significant:

The nearest airport is the Salinas Municipal Airport located approximately 2 miles southwest of the project site. The project site is not located within the projected 60 dBA CNEL contour of this airport. No private airstrips are located within two miles of the project site. For these reasons, this impact is considered less than significant.

14. Population and Housing

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Induce substantial unplanned population growth either in an area, directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			✓	
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				✓

a. Less Than Significant:

The proposed project would not induce substantial unplanned growth. The project does not involve the development of new homes or businesses or require the extension of roads or other infrastructure.

b. No Impact:

The project site is vacant and will not displace any housing or people.

15. Public Services

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities or need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
(i) Fire Protection?			✓	
(ii) Police Protection?			✓	
(iii) Schools?				✓
(iv) Parks?			✓	
(v) Other public facilities?				✓

a.(i),(ii)&(iv) Less Than Significant:

The project would result in a small increase in demand for fire, police, and park services, but would not require new or altered facilities. The project site is within the city limits in a developed neighborhood currently served by fire and police services.

a.(iii)&(v) No Impact:

The project would provide early childhood development services to an existing community and would not have any impact on existing schools. The District received no comments from agencies providing public services in response to the request for preliminary comment for the project.

16. Recreation

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			✓	

b. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?			✓	

a. & b. Less Than Significant:

The Williams Ranch Neighborhood Park is located across the street from the proposed project. The establishment of the child development center may increase the use of the adjacent park after school hours by parents and their children; however, the capacity of this facility is too small to substantially contribute to the deterioration of the park.

The project includes recreational facilities, the impacts of which are discussed throughout this document as part of the whole project. No additional impacts specific to the recreational facilities portion of the project are anticipated.

17. Transportation

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?		✓		
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				✓
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				✓
d. Result in inadequate emergency access?				✓

The discussion of transportation and traffic impacts in this section primarily reflects information in the Traffic Impact Analysis (TIA) prepared for the project by JLB Traffic Engineering, Inc (Appendix F). The study reflects the site plan the District prepared for the school, traffic and street conditions, and the requirements of the City of Salinas for traffic impact studies.

(Note: Table E-17-1 provides definitions for traffic-related terms used in this section.)

a. & c. Less Than Significant with Mitigation:

The following conclusions and recommendations are made with evidence from the aforementioned TIA.

TABLE E-17-1
Transportation/Traffic Definitions and Standards

Roadway Categories

- Expressways: Expressways provide for through traffic movement on continuous routes through a city. It generally connects with arterials, highways, freeways. Also, it connects a city with other cities. Expressways are generally four lane roadways, divided and undivided. Access to expressways is typically restricted to signalized intersections with arterial and collector streets.
- Arterials: Arterials are designed to move large volumes of traffic and are intended to provide a high level of mobility between freeways, expressways, other arterials, and collector roadways. Arterials also provide non-freeway/highway connections between major residential, employment, and activity centers. Unlike freeways, they are intended not only for motor vehicles, but also for bicycles and pedestrians. Arterial streets typically have more right-of-way and a higher degree of access control than collector roadways.
- Collectors: Collector streets provide for relatively short distance travel between and within neighborhoods. Collectors are not designed to handle long-distance through-traffic. Driveway access to collectors is less limited than on arterials. Speed limits on these streets are typically lower than those found on arterials.
- Local Streets: Local streets are designed to provide direct roadway access to abutting land uses and serve short distance trips within neighborhoods. Traffic volumes and speed limits on local streets are low, and these roadways have no more than two travel lanes.

Level of Service

The Level of Service (LOS) is the primary measure of roadway performance. LOS is a qualitative description of traffic flow from the perspective of motorists. The Highway Capacity Manual (HCM) developed by the Transportation Research Board defines the following six levels of service from LOS A to LOS F. These grades represent the perspective of drivers only and are an indication of the comfort and convenience associated with driving, as well as speed, travel time, traffic interruptions, and freedom to maneuver.

- Level of Service A: Free-flow operations. Drivers are almost completely unimpeded in their ability to maneuver within the traffic stream.
- Level of Service B: Free-flow speeds are maintained. The ability to maneuver within the traffic stream is only slightly restricted.
- Level of Service C: Traffic flow with speeds at or near free-flow speed. The freedom to maneuver within the traffic steam is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.
- Level of Service D: Speeds begin to decline slightly with increasing flows. Freedom to maneuver within the traffic stream is noticeably limited.
- Level of Service E: Operations at or near capacity. There are virtually no useable gaps within the traffic stream, leaving little room to maneuver.
- Level of Service F: Breakdown in vehicular flow. Vehicular demand exceeds capacity. (Fehr and Peers 2014)

AM Peak Hour/PM Peak Hour

For purposes of this Initial Study,

- AM Peak Hour (or morning peak hour) means the average vehicle trip ends versus dwelling units for residential units and students for elementary schools on a weekday, peak hour of adjacent street traffic, one hour between 7 and 9 a.m.
- PM Peak Hour (or evening peak hour) means the average vehicle trip ends versus dwelling units for residential units and students for elementary schools on a weekday, peak hour of adjacent street traffic, one hour between 2 and 4 p.m., or between 5 and 7 p.m. on Fridays. The Friday PM peak was chosen as between 5 and 7 PM to coincide with the school's peak traffic activities during a Friday Event such as a high school football game.

Conclusions and Recommendations

The conclusions and recommendations of the Traffic Impact Analysis are provided below:

Existing Traffic Conditions

- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- A review of the Project driveways to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- To improve on-site and off-site circulation, it is recommended that the Project install signage at the exit only Project Driveway to Buckhorn Drive to assist drivers. Such signage could include "DO NOT ENTER" signs (R5-1) on the northern and southern point of the Project driveway facing northbound toward southbound traffic and southbound toward northbound traffic on Buckhorn Drive.
- Based on JLB's review of the pedestrian travel paths within the Project Site, it is recommended that the Project install 4-foot wide walkway in place of the park strip located adjacent to the proposed access to Falcon Drive to the east. In addition, it is recommended that the Project install a minimum 8-foot wide crosswalk at Buckhorn Drive north of Falcon drive in line with the southern limits of the concrete paving. These on-site improvements will help minimize conflicts between pedestrians and vehicles traveling through the parking lot, thus improving pedestrian safety.
- At Buildout, the proposed Project is estimated to generate a maximum of 170 daily trips, 60 AM peak hour trips, and 31 PM peak hour trips.
- It is recommended that the Project ensure that there are no obstructions within the corner sight distance of 150 feet greater than two (2) feet above the street grade for vehicles approaching north and south along Buckhorn Drive at the Project driveway and for vehicles approaching east and west along Falcon Drive at the Project driveway.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Project is 1,076 daily trips, 85 AM peak hour trips, and 113 PM peak hour trips.
- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an acceptable LOS during the AM peak period. It should be noted that the recommended

improvement is projected to be needed with or without the Project. To improve its LOS, it is recommended that the following improvements be implemented:

  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane.

Cumulative 2040 No Project Traffic Conditions

- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve LOS at this intersection, it is recommended that the following improvements be implemented:
  - Freedom Parkway / Cougar Drive:
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane.

Cumulative 2040 plus Project Traffic Conditions

- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve LOS at this intersection, it is recommended that the following improvements be implemented:
  - Freedom Parkway / Cougar Drive:
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane.

Queuing Analysis

It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

It is recommended that the Project contribute its equitable fair share for those portions of the recommended mitigation measures not fully funded by existing funding sources as listed in Table IX of Appendix F for the future improvements as necessary to maintain an acceptable LOS.

- **Mitigation Measure T-1:** The District shall be responsible for contributing its fair share towards the necessary improvements to the Freedom Parkway / Cougar Drive intersection, as identified in the Traffic Impact Analysis (Initial Study Appendix F). The fair share contribution percentages is shown as 4.29% in Appendix F, Table IX).
- **Mitigation Measure T-2:** The Project shall install signage at the exit only Project Driveway to Buckhorn Drive to assist drivers. Such signage could include "DO NOT ENTER" signs (R5-1) on the northern and southern point of the Project driveway facing northbound toward southbound traffic and southbound toward northbound traffic on Buckhorn Drive.
- **Mitigation Measure T-3:** The Project shall install a 4-foot wide walkway in place of the park strip located adjacent to the proposed access to Falcon Drive to the east. In addition, the Project shall install a minimum 8-foot wide crosswalk at Buckhorn Drive north of Falcon drive in line with the

southern limits of the concrete paving. These on-site improvements will help minimize conflicts between pedestrians and vehicles traveling through the parking lot, thus improving pedestrian safety.

- **Mitigation Measure T-4:** The Project shall ensure that there are no obstructions within the corner sight distance of 150 feet greater than two (2) feet above the street grade for vehicles approaching north and south along Buckhorn Drive at the Project driveway and for vehicles approaching east and west along Falcon Drive at the Project driveway.

b. No Impact:

Transportation Agency for Monterey county (TAMC) is the designated Congestion Management Agency for Monterey County. TAMC has opted out of the California Congestion Management Program and is therefore exempt from the requirement to create a Congestion Management Plan. Thus, TAMC has no standards established to address congestion.

d. No Impact

The project will have emergency access from public streets on both the west and south sides of the site. Access points will comply with the City's development standards.

18. Tribal Cultural Resources

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in the Public Resource Code § 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 cultural value to a California Native American tribe, and that is:				
(i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in the Public Resources Code § 5020.1(k)?				✓
(ii) 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 Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe?		✓		

a. Less Than Significant with Mitigation

A Native American Heritage Commission (NAHC) Sacred Lands File search was conducted (see Appendix C), which did not identify any known areas of concern in the NAHC inventory. A California Historical Resources Information System (CHRIS) records search (see Appendix C) revealed that a cultural resource study that includes the project site and a larger surrounding area was completed in 1986. The study indicated that there is no record of archaeological resources, and no listed resources, landmarks, historic places, or points of historical interest. The CHRIS letter indicated that "there is a low possibility of identifying Native American and historic-period archaeological resources and further study is not recommended at this time".

Letters describing the proposed project were sent to each of the Native American contacts identified by the NAHC. The Ohlone/Costanoan-Esselen Nation (OCEN) responded to the Request for Comment with a letter requesting the following (see Appendix C):

1. Provide OCEN with all reports.
2. Establish procedure for disturbance of unknown sites.
3. Establish procedure for known sites.
4. Complete record searches through NAHC Sacred Lands and CHRIS.

In response:

1. OCEN will be provided with a copy of this Initial Study and will be given an opportunity to provide comment.
2. Mitigation Measures CR-2 and CR-3 provide procedures for unknown sites (see Section E, 5)
3. There are no known sites within the project area.
4. NAHC and CHRIS record searches were conducted and are included in Appendix C.

Mitigation Measures CR-2 and CR-3 will mitigate impacts to unknown subsurface sites.

19. Utilities and Service Systems

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?			✓	
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?			✓	
c. Result in determination by the wastewater treatment provider, which serves or may serve the project, that it has adequate capacity to serve the			✓	

project's projected demand in addition to the provider's existing commitments?				
d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			✓	
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			✓	

a. Less Than Significant:

The project site is surrounded by development that is served by existing water, wastewater, stormwater, electric, gas, and telecommunications facilities. The water, wastewater, and stormwater demand of the project will not exceed existing capacity and will not require the construction of new facilities.

b. Less Than Significant:

Alco Water Service provides domestic and irrigation water for the proposed project site. The project site is less than an acre in size, located in a developed urban area and planned and zoned for public/semipublic use. As such, the water use for the project site was anticipated in water supply planning for the area and would not have an appreciable effect on water supply.

c. Less Than Significant:

The City of Salinas sewer system and Monterey One Water (formerly Monterey Regional Water Pollution Control Agency) wastewater treatment system will serve the project. The project site is less than an acre in size, located in a developed urban area and planned and zoned for public/semipublic use. As such, the wastewater demand for the project site was anticipated in sewer and wastewater treatment system planning for the area and would not have an appreciable effect on wastewater treatment capacity.

d. & e. Less Than Significant:

The Salinas Valley Solid Waste Authority (SVSWA) will serve the project's recycling and landfill needs. Due to the small size of the project, the solid waste disposal needs of the project will not have an appreciable effect on the SVSWA's landfill capacity. SVSWA offers free assistance to schools in the Salinas Valley to implement comprehensive classroom and campus-wide recycling programs. SVSWA provides free waste assessments and customized, detailed reports with recommendations for implementing or improving recycling at schools. The District operates its existing schools and would operate the proposed project in compliance with applicable statues and regulation related to solid waste.

20. Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?				✓

b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from wildfire or the uncontrolled spread of wildfire?				✓
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in the temporary or ongoing impacts to the environment?				✓
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				✓

a.-d. No Impact:

The project site is not located in or near a State Responsibility Area and is not classified as a Very High Fire Hazard Severity Zone.

21. Mandatory Findings of Significance

Does the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		✓		
b. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)			✓	

c. Have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?		✓		

a. Less Than Significant with Mitigation:

Based on the information in Sections E, 1 – E, 20, the potential for the proposed project to have any of the impacts described in this subsection 21, a, would be less than significant with the mitigation measures incorporated into the project (see Section E, 4, Biological Resources, and Section E, 5, Cultural Resources).

b. Less Than Significant:

Based on the information in Sections E, 1 – E, 20, the proposed project would not have impacts that would be individually limited but cumulatively considerable.

c. Less Than Significant with Mitigation:

Based on the information in Sections E, 1 – E, 20, the proposed project would have less than significant impacts on human beings, either directly or indirectly with the mitigation measures incorporated into the project (see Section E, 13, Noise and Section E, 17, Transportation).

(This space intentionally left blank)

F. Mitigation Monitoring and Reporting Program

1. Purpose

The District has prepared this Mitigation Monitoring and Reporting Program to comply with Section 15097 of the State CEQA Guidelines. The purpose for the Mitigation Monitoring and Reporting Program is to ensure implementation of the mitigation measures identified in this Initial Study.

2. Lead Agency

Alisal Union School District will undertake the project and is the Lead Agency for the project. The District is responsible for the implementation of all mitigation measures identified in this Initial Study.

3. Mitigation Monitoring and Reporting Coordinator

The Associate Superintendent, Business Services, or her/his designee shall act as the Project Mitigation Reporting Coordinator ("Coordinator").

4. Monitoring and Reporting Procedures for Design-, Site Clearing-, and Construction Mitigation Measures

a. The Coordinator shall provide a copy of all project design-, site clearing- and construction-related mitigation measures to the project engineer and contractor for incorporation in the project plans, construction specifications, permits, and contracts, as appropriate.

b. Prior to award of bid, the Coordinator shall determine that all project design-, site clearing- and construction-related mitigation measures have been incorporated in the project plans, construction specifications, permits, and contracts, as appropriate.

c. During construction, the Coordinator, through the construction management team, shall inspect the project area regularly to ensure all work complies with the mitigation measures. If a discrepancy is not resolved within a reasonable time, the Coordinator may order work to cease until the discrepancy is resolved.

d. Prior to the District accepting the project improvements, the Coordinator shall certify that the project incorporates all project design and construction-related mitigation measures.

5. Monitoring and Reporting Procedures for Operational- and Maintenance-Related Mitigation Measures

There are no operations-related mitigation measures.

6. Mitigation Measures

Table F-1

Mitigation Measures

AE-1	**Aesthetics: Light and Glare** Prior to the start of construction, the District shall prepare and implement a photometric lighting plan demonstrating compliance with City Standards with regard to light and glare.

BR-1	**Biological Resources: Mitigation for Potential Impacts to Special Status Bird Species** 1. Avoidance: If feasible, any vegetation removal within the project area shall take place between September 1 and February 1 to avoid impacts to nesting birds in compliance with the Migratory Bird Treaty Act (MBTA). No surveys well be required if project timing occurs outside of the bird breeding season. If vegetation removal or building demolition must occur during the nesting season, project construction may be delayed due to actively nesting birds and their required protective buffers. 2. Pre-construction Surveys: a. If construction is to begin during the nesting season (February 1 through August 31), a qualified biologist shall conduct a pre-construction survey within 14 days prior to initiation of disturbance activities. This survey will search for nest sites on buildings and in trees, bushes, or grass within the project area. b. Surveys for burrowing owl will occur within 14 days prior to any ground disturbance, no matter the season. This survey will cover potential burrowing owl burrows in the project area and suitable habitat within 150 m (500 ft). Evaluation of use by owls shall be in accordance with California Department of Fish and Wildlife survey guidelines (CBOC 1993, CDFG 1995, CDFG 2012). Surveys will document if burrowing owls are nesting or using habitat in or directly adjacent to the project area. Survey results will be valid only for the season (breeding (Feb 1-Aug 31) or non-breeding (Sept 1-Jan 31) during which the survey is conducted. c. If the pre-construction survey does not detect any active nests or burrows, then no further action is required. If the survey does detect an active nest or burrow, then the District shall implement the following mitigation measures. 3. Minimization/Establish Buffers: a. If any active nests are discovered (and if construction will occur during bird breeding season), the District shall contact the United States Fish and Wildlife Service and/or California Department of Fish and Wildlife to determine protective measures required to avoid take. These measures could include fencing an area where a nest occurs or shifting construction work temporally or spatially away from the nesting birds. Biologists would be required on site to monitor construction activity while protected migratory birds are nesting in the project area. If an active nest is found after the completion of the pre-construction surveys and after construction begins, all construction activities shall stop until a qualified biologist has evaluated the nest and erected the appropriate buffer around the nest. b. If burrowing owls are detected within the survey area, CDFW will be consulted to determine the suitable buffer. These buffers will take into account the level of disturbance of the project activity, existing disturbance of the site (vehicle traffic, humans, pets, etc.), and time of year (nesting vs. wintering). If avoidance is not feasible, the District will work with CDFW to determine appropriate mitigation, such as passive exclusion or translocation, and associated mitigation land offset (CDFG 2012).
CR-1	**Cultural Resources: Subsurface Archaeological Resources** If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the District on the measures that shall be implemented to protect the discovered resources, including but not

	limited to excavation of the finds and evaluation of the finds in accordance with § 15064.5 of the CEQA Guidelines. If the resources are determined to be unique historical resources as defined under § 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to an appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.
CR-2	**Cultural Resources: Subsurface Historical Resources** In the event that subsurface prehistoric archaeological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archaeologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with § 15064.5 of the CEQA Guidelines. If the resources are determined to be unique prehistoric archaeological resources as defined under § 15064.5 of the CEQA Guidelines, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any prehistoric archaeological artifacts recovered as a result of mitigation shall be provided to a appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.
CR-3	**Cultural Resources: Human Remains** In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) § 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC § 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC § 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

GEO-1	**Geology and Soils: Subsurface Paleontological Resources** In the event that unique paleontological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified paleontologist shall be consulted to determine whether the resource requires further study. The qualified paleontologist shall make recommendations to the District on the measures that shall be implemented to protect the discovered resources, including but not limited to, excavation of the finds and evaluation of the finds. If the resources are determined to be significant, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any paleontological resources recovered as a result of mitigation shall be provided to an appropriate institution or person who is capable of providing long-term preservation to allow future scientific study.
	Noise: Mitigation for Construction Noise
N-1	Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the daytime hours of 7:00 a.m. and 9:00 p.m. Construction activities shall be prohibited on Sundays and legal holidays.
N-2	Stationary construction equipment (e.g., portable power generators) should be located at the furthest distance possible from nearby residences. If deemed necessary, portable noise barriers shall be erected sufficient to shield nearby residences from direct line-of-sight of stationary construction equipment.
N-3	Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
N-4	When not in use, motorized construction equipment shall not be left idling for periods greater than 5 minutes.
	Traffic: Mitigation for Increased Traffic Generated by Project
T-1	The District shall be responsible for contributing its fair share towards the necessary improvements to the Freedom Parkway / Cougar Drive intersection, as identified in the Traffic Impact Analysis (Initial Study Appendix F). The fair share contribution percentages is shown as 4.29% in Appendix F, Table IX).
T-2	The Project shall install signage at the exit only Project Driveway to Buckhorn Drive to assist drivers. Such signage could include "DO NOT ENTER" signs (R5-1) on the northern and southern point of the Project driveway facing northbound toward southbound traffic and southbound toward northbound traffic on Buckhorn Drive.
T-3	The Project shall install a 4-foot wide walkway in place of the park strip located adjacent to the proposed access to Falcon Drive to the east. In addition, the Project shall install a minimum 8-foot wide crosswalk at Buckhorn Drive north of Falcon drive in line with the southern limits of the concrete paving. These on-site improvements will help minimize conflicts between pedestrians and vehicles traveling through the parking lot, thus improving pedestrian safety.
T-4	The Project shall ensure that there are no obstructions within the corner sight distance of 150 feet greater than two (2) feet above the street grade for vehicles approaching north and south along Buckhorn Drive at the Project driveway and for vehicles approaching east and west along Falcon Drive at the Project driveway.

G. Names of Persons Who Prepared or Participated in the Initial Study/Environmental Checklist

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H. Sources Consulted

Following are the documents and other sources consulted in preparing this Initial Study:

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Appendix A

Air Quality & Greenhouse Gas Impact Assessment

AIR QUALITY & GREENHOUSE GAS IMPACT ASSESSMENT

FOR

BUCKHORN EARLY LEARNING CENTER

ALISAL UNION SCHOOL DISTRICT

SALINAS, CA

MARCH 2019

PREPARED FOR:

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AAM	Annual Arithmetic Mean
AHERA	Asbestos Hazard Emergency Response Act
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
CAAQS	California Ambient Air Quality Standards
CBSC	California Building Standards Code
CCAA	California Clean Air Act
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DPM	Diesel-Exhaust Particulate Matter or Diesel-Exhaust PM
DRRP	Diesel Risk Reduction Plan
FCAA	Federal Clean Air Act
GHG	Greenhouse Gases
HAP	Hazardous Air Pollutant
LOS	Level of Service
MBARD	Monterey Bay Air Resources District
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NCCAB	North Central Coast Air Basin
NO_x	Oxides of Nitrogen
O_3	Ozone
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate Matter (less than 10 μm)
$PM_{2.5}$	Particulate Matter (less than 2.5 μm)
ppb	Parts per Billion
ppm	Parts per Million
ROG	Reactive Organic Gases
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
sq.ft.	Square Feet
TAC	Toxic Air Contaminant
TOG	Total Organic Gases
$\mu g/m^3$	Micrograms per cubic meter
UNFCCC	United Nations Framework Convention on Climate Change
U.S. EPA	United State Environmental Protection Agency
VOC	Volatile Organic Gases

INTRODUCTION

This report provides an evaluation of potential air quality and greenhouse gas (GHG) impacts associated with the proposed Buckhorn Early Learning Center (Project). An overview of the existing environmental setting related to air quality and greenhouse gases, including a summary of the existing regulatory framework has also been included. Air quality and GHG impacts were evaluated based, in part, on traffic data derived from the *Buckhorn Early Learning Center Administrative Draft Traffic Impact Analysis* (2019), prepared by JLB Traffic Engineers, Inc. This analysis was prepared in accordance with Monterey Bay Air Resources District (MBARD)-recommended guidance.

PROPOSED PROJECT OVERVIEW

The Alisal Union School District (District) is proposing to undertake the *Buckhorn Early Learning Center*. The proposed project is located at 1081 Buckhorn Drive, Salinas, California, on the northeast corner of Buckhorn Drive and Falcon Drive. The project location is depicted in Figure 1. The project site and surrounding land uses are depicted in Figure 2. The proposed project involves the construction of a one-story 8,200 square-feet building with five classrooms, a playground, and a 22-stall parking lot on a 0.8-acre parcel. The Project is estimated to serve up to 90 preschool-aged children and 15 faculty members. Hours of operation would occur during the weekdays from 7:30 AM to 3:30 PM. The proposed site plan is depicted in Figure 3.

AIR QUALITY

EXISTING SETTING

The proposed project is located within the North Central Coast Air Basin (NCCAB) and within the jurisdiction of the Monterey Bay Air Resources District (MBARD). Air quality in a region is affected by its topography, meteorology, and climate. These factors are discussed in more detail in the following sections:

TOPOGRAPHY

The NCCAB encompasses Santa Cruz, San Benito, and Monterey County. The NCCAB is generally bounded by the Diablo Range to the northeast, which together with the southern portion of the Santa Cruz Mountains forms the Santa Clara Valley which extends into the northeastern tip of the NCCAB. Farther south, the Santa Clara Valley transitions into the San Benito Valley, which runs northwest-southeast and has the Gabilan Range as its western boundary. To the west of the Gabilan Range is the Salinas Valley that extends from Salinas at the northwest end to King City at the southeast end. The northwest portion of the NCCAB is dominated by the Santa Cruz Mountains.

METEOROLOGY AND CLIMATE

The climate of the NCCAB is dominated by a semi-permanent high pressure cell over the Pacific Ocean. In the summer, the dominant high pressure cell results in persistent west and northwest winds across the majority of coastal California. As air descends in the Pacific high pressure cell, a stable temperature inversion is formed. As temperatures increase, the warmer air aloft expands, forcing the coastal layer of air to move onshore producing a moderate sea breeze over the coastal plains and valleys. Temperature inversions inhibit vertical air movement and often result in increased transport of air pollutants to inland receptor areas.

In the winter, when the high pressure cell is weakest and farthest south, the inversion associated with the Pacific high pressure cell is typically absent in the NCCAB. Air frequently flows in a southeasterly direction out of the Salinas and San Benito valleys in the NCCAB. The predominant offshore flow during this time of year tends to aid in pollutant dispersal producing relatively healthful to moderate air quality throughout the majority of the region. Conditions during this time are often characterized by afternoon and evening land breezes and occasional rain. However, local inversions caused by the cooling of air close to the ground can form in some areas during the evening and early morning hours.

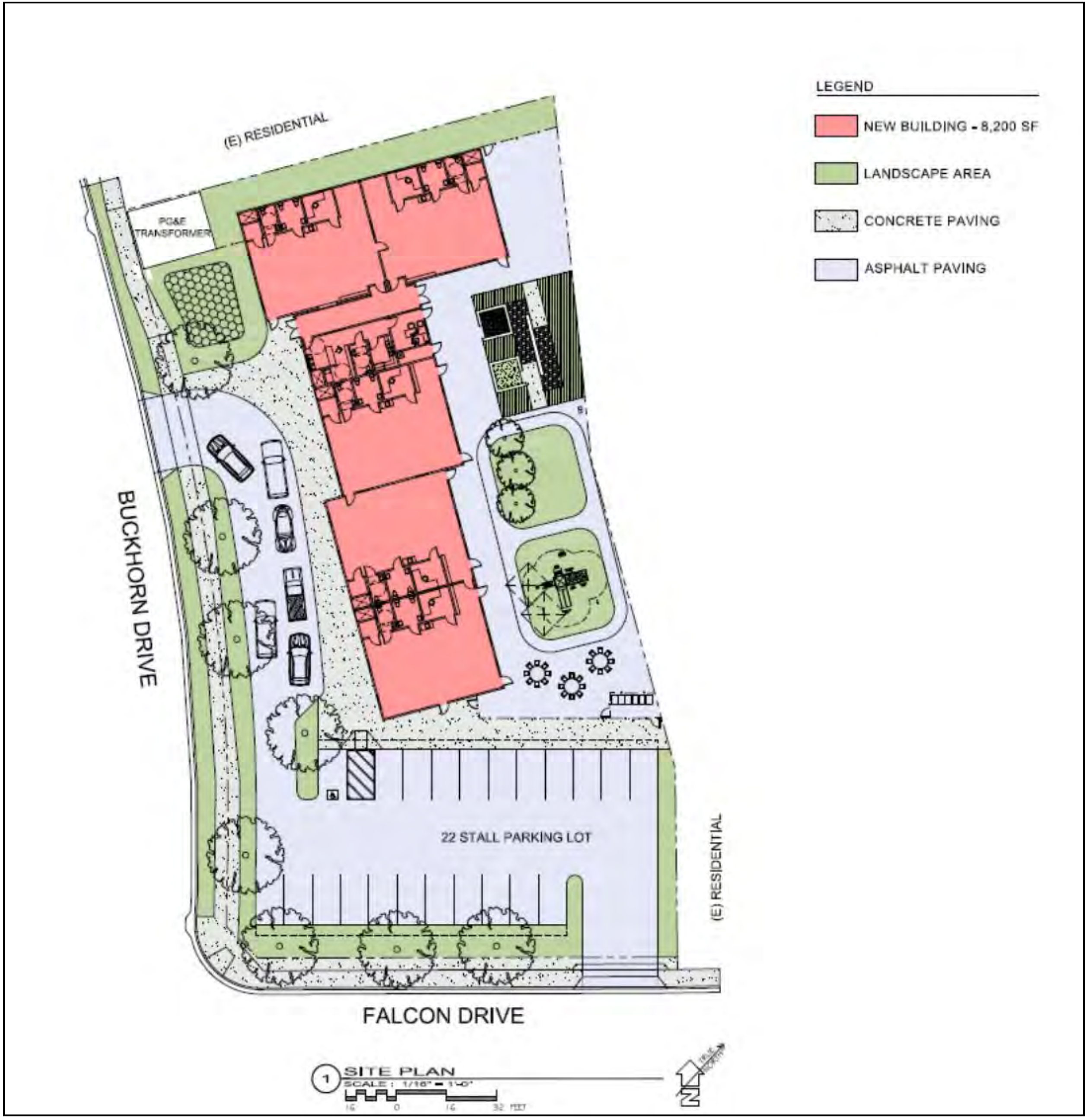
Figure 1
Project Location

Source: ISA 2018

Figure 2
Project Site & Nearby Land Uses

Notes: Locations are approximate.

Figure 3
Project Site Plan



Source: ISA 2018

Winter daytime temperatures in the NCCAB typically average in the mid-50s during the day, with nighttime temperatures averaging in the low 40s. Summer daytime temperatures typically average in the 60s during the day, with nighttime temperatures averaging in the 50s. Precipitation varies within the region, but in general, annual rainfall is lowest in the coastal plain and inland valley, higher in the foothills, and highest in the mountains.

CRITERIA AIR POLLUTANTS

For the protection of public health and welfare, the Federal Clean Air Act (FCAA) required that the United States Environmental Protection Agency (U.S. EPA) establish National Ambient Air Quality Standards (NAAQS) for various pollutants. These pollutants are referred to as "criteria" pollutants because the U.S. EPA publishes criteria documents to justify the choice of standards. These standards define the maximum amount of an air pollutant that can be present in ambient air. An ambient air quality standard is generally specified as a concentration averaged over a specific time period, such as one hour, eight hours, 24 hours, or one year. The different averaging times and concentrations are meant to protect against different exposure effects. Standards established for the protection of human health are referred to as primary standards; whereas, standards established for the prevention of environmental and property damage are called secondary standards. The FCAA allows states to adopt additional or more health-protective standards. The air quality regulatory framework and ambient air quality standards are discussed in greater detail later in this report.

The following provides a summary discussion of the primary and secondary criteria air pollutants of primary concern. In general, primary pollutants are directly emitted into the atmosphere, and secondary pollutants are formed by chemical reactions in the atmosphere. The summary of criteria air pollutants and health effects are in Table 1.

Ozone (O_3) is a reactive gas consisting of three atoms of oxygen. In the troposphere, it is a product of the photochemical process involving the sun's energy. It is a secondary pollutant that is formed when NO_X and volatile organic compounds (VOC), also referred to as reactive organic gases (ROG) react in the presence of sunlight. Ozone at the earth's surface causes numerous adverse health effects and is a criteria pollutant. It is a major component of smog. In the stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation.

High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. Ozone also damages natural ecosystems such as forests and foothill communities, agricultural crops, and some man-made materials, such as rubber, paint, and plastics.

Reactive Organic Gas (ROG) is a reactive chemical gas, composed of hydrocarbon compounds that may contribute to the formation of smog by their involvement in atmospheric chemical reactions. No separate health standards exist for ROG as a group. Because some compounds that make up ROG are also toxic, like the carcinogen benzene, they are often evaluated as part of a toxic risk assessment. Total Organic Gases (TOGs) includes all of the ROGs, in addition to low reactivity organic compounds like methane and acetone. ROGs and VOC are subsets of TOG.

Volatile Organic Compounds (VOC) are hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and may also be toxic. VOC emissions are a major precursor to the formation of ozone. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints.

Oxides of Nitrogen (NO_X) are a family of gaseous nitrogen compounds and is a precursor to the formation of ozone and particulate matter. The major component of NO_X, nitrogen dioxide (NO_2), is a reddish-brown gas that is toxic at high concentrations. NO_X results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of this air pollutant.

Particulate Matter (PM), also known as particle pollution, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. U.S. EPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. U.S. EPA groups particle pollution into three categories based on their size and where they are deposited:

- "Inhalable coarse particles ($PM_{2.5}$- PM_{10})," such as those found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5\text{-}10}$ is deposited in the thoracic region of the lungs.
- "Fine particles ($PM_{2.5}$)," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
- "Ultrafine particles (UFP)," are very small particles less than 0.1 micrometers in diameter largely resulting from the combustion of fossils fuels, meat, wood, and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, its high surface area, deep lung penetration, and transfer into the bloodstream can result in disproportionate health impacts relative to their mass.

PM_{10}, $PM_{2.5}$, and UFP include primary pollutants (emitted directly to the atmosphere) as well as secondary pollutants (formed in the atmosphere by chemical reactions among precursors). Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM_{10} sources include these same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust.

Numerous scientific studies have linked both long- and short-term particle pollution exposure to a variety of health problems. Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and also acute (short-term) bronchitis, and may also increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short term exposures, although they may experience temporary minor irritation when particle levels are elevated.

Carbon Monoxide (CO) is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels and is emitted directly into the air (unlike ozone). The main source of CO is on-road motor vehicles. Other CO sources include other mobile sources, miscellaneous processes, and fuel combustion from stationary sources. Because of the local nature of CO problems, ARB and U.S. EPA designate urban areas as CO nonattainment areas instead of the entire basin as with ozone and PM_{10}. Motor vehicles are by far the largest source of CO emissions. Emissions from motor vehicles have been declining since 1985, despite increases in vehicle miles traveled, with the introduction of new automotive emission controls and fleet turnover.

Sulfur Dioxide (SO_2) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. However, like airborne NO_X, suspended SO_X particles contribute to poor visibility. These SO_X particles can also combine with other pollutants to form $PM_{2.5}$. The prevalence of low-sulfur fuel use has minimized problems from this pollutant.

Lead (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage. Lead can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically.

Hydrogen Sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations; especially in enclosed spaces (800 ppm can cause death). OSHA regulates workplace exposure to H_2S.

Table 1
Summary of Criteria Air Pollutants and Health Effects

Pollutant	Major Man-Made Sources	Human Health & Welfare Effects
Ozone (O_3)	Formed by a chemical reaction between volatile organic compounds (VOC) and nitrous oxides (NOx) 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. Damages rubber, some textiles and dyes.
Particulate Matter (PM_{10} & $PM_{2.5}$)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Can get deep into your lungs or even enter your blood stream, and cause serious health problems; Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Carbon Monoxide (CO)	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, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	Fuel combustion in motor vehicles and industrial sources. Motor vehicles; electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming, and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Sulfur Dioxide (SO_2)	Formed when fuel containing sulfur, such as coal and oil, is burned; when gasoline is extracted from oil; or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, large ships, and fuel combustion in diesel engines.	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; damage crops and natural vegetation. Impairs visibility. Precursor to acid rain.

Source: CAPCOA 2019.

Other Pollutants

The State of California has established air quality standards for some pollutants not addressed by Federal standards. The California Air Resources Board (ARB) has established State standards for hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particles. The following section summarizes these pollutants and provides a description of the pollutants' physical properties, health and other effects, sources, and the extent of the problems.

Sulfates (SO_4^{2-}) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The ARB sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilator function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property.

Visibility Reducing Particles: Are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Vinyl Chloride (C_2H_3Cl or VCM) is a colorless gas that does not occur naturally. It is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloro-ethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

ODORS

Typically odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the psychological (i.e. irritation, anger, or anxiety) to the physiological, including circulatory and respiratory effects, nausea, vomiting, and headache.

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor and in fact, an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Neither the state nor the federal governments have adopted rules or regulations for the control of odor sources. The MBARD does not have an individual rule or regulation that specifically addresses odors; however, odors would be subject to MBARD *Rule 402, Nuisance*. Any actions related to odors would be based on citizen complaints to local governments and the MBARD.

TOXIC AIR CONTAMINANTS

Toxic air contaminants (TACs) are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air, but due to their high toxicity, they may pose a threat to public health even at very low concentrations. Because there is no threshold level below which adverse health impacts are not expected to occur, TACs differ from criteria pollutants for which acceptable levels of exposure can be determined and for which state and federal governments have set ambient air quality standards. TACs, therefore, are not considered "criteria pollutants" under either the FCAA or the California Clean Air Act (CCAA), and are thus not subject to National or California ambient air quality standards (NAAQS and CAAQS, respectively). Instead, the U.S. EPA and the ARB regulate Hazardous Air Pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. In conjunction with MBARD rules, these federal and state statutes and regulations establish the regulatory framework for TACs. At the national levels, the U.S. EPA has established National Emission Standards for HAPs (NESHAPs), in accordance with the requirements of the FCAA and subsequent amendments. These are technology-based source-specific regulations that limit allowable emissions of HAPs.

Within California, TACs are regulated primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. The following provides a summary of the primary TACs of concern within the State of California and related health effects:

Diesel Particulate Matter (DPM) was identified as a TAC by the ARB in August 1998. DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 40 percent of the statewide total, with an additional 57 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about 3 percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report DPM emissions also include heavy construction, manufacturers of asphalt paving materials and blocks, and diesel-fueled electrical generation facilities (ARB 2013).

In October 2000, the ARB issued a report entitled: "Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles", which is commonly referred to as the Diesel Risk Reduction Plan (DRRP). The DRRP provides a mechanism for combating the DPM problem. The goal of the DRRP is to reduce concentrations of DPM by 85 percent by the year 2020, in comparison to year 2000 baseline emissions. The key elements of the DRRP are to clean up existing engines through engine retrofit emission control devices, to adopt stringent standards for new diesel engines, and to lower the sulfur content of diesel fuel to protect new, and very effective, advanced technology emission control devices on diesel engines. When fully implemented, the DRPP will significantly reduce emissions from both old and new diesel fueled motor vehicles and from stationary sources that burn diesel fuel. In addition to these strategies, the ARB continues to promote the use of alternative fuels and electrification. As a result of these actions, DPM concentrations and associated health risks in future years are projected to decline (ARB 2013).

Exposure to DPM can have immediate health effects. DPM can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, Exposure to DPM also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood illnesses and can also reduce lung function in children. In California, DPM has been identified as a carcinogen.

Acetaldehyde is a federal hazardous air pollutant. The ARB identified acetaldehyde as a TAC in April 1993. Acetaldehyde is both directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Sources of acetaldehyde include emissions from combustion processes such as exhaust from mobile sources and fuel combustion from stationary internal combustion engines, boilers, and process heaters. A majority of the statewide acetaldehyde emissions can be attributed to mobile sources, including on-road motor vehicles, construction and mining equipment, aircraft, recreational boats, and agricultural equipment. Area sources of emissions include the burning of wood in residential fireplaces and wood stoves. The primary stationary sources of acetaldehyde are from fuel combustion from the petroleum industry (ARB 2013).

Acute exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic intoxication of acetaldehyde resemble those of alcoholism. The U.S. EPA has classified acetaldehyde as a probable human carcinogen. In California, acetaldehyde was classified on April 1, 1988, as a chemical known to the state to cause cancer (U.S. EPA 2014; ARB 2013).

Benzene is highly carcinogenic and occurs throughout California. The ARB identified benzene as a TAC in January 1985. A majority of benzene emitted in California (roughly 88 percent) comes from motor vehicles, including evaporative leakage and unburned fuel exhaust. These sources include on-road motor vehicles, recreational boats, off-road recreational vehicles, and lawn and garden equipment. Benzene is also formed as a partial combustion product of larger aromatic fuel components. To a lesser extent, industry-related stationary sources are also sources of benzene emissions. The primary stationary sources of reported benzene emissions are crude petroleum and natural gas mining, petroleum refining, and electric generation that involves the use of petroleum products. The primary area sources include residential combustion of various types such as cooking and water heating (ARB 2013).

Acute inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidences of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. The U.S. EPA has classified benzene as known human carcinogen for all routes of exposure (U.S. EPA 2014).

1,3-butadiene was identified by the ARB as a TAC in 1992. Most of the emissions of 1,3-butadiene are from incomplete combustion of gasoline and diesel fuels. Mobile sources account for a majority of the total statewide emissions. Additional sources include agricultural waste burning, open burning associated with forest management, petroleum refining, manufacturing of synthetics and man-made materials, and oil and gas extraction. The primary natural sources of 1,3-butadiene emissions are wildfires (ARB 2013).

Acute exposure to 1,3-butadiene by inhalation in humans results in irritation of the eyes, nasal passages, throat, and lungs. Epidemiological studies have reported a possible association between 1,3-butadiene exposure and cardiovascular diseases. Epidemiological studies of workers in rubber plants have shown an association between 1,3-butadiene exposure and increased incidence of leukemia. Animal studies have reported tumors at various sites from 1,3-butadiene exposure. In California, 1,3-butadiene has been identified as a carcinogen.

Carbon Tetrachloride was identified by the ARB as a TAC in 1987 under California's TAC program (ARB 2013). The primary stationary sources reporting emissions of carbon tetrachloride include chemical and allied product manufacturers and petroleum refineries. In the past, carbon tetrachloride was used for dry cleaning and as a grain-fumigant. Usage for these purposes is no longer allowed in the United States. Carbon tetrachloride has not been registered for pesticidal use in California since 1987. Also, the use of carbon tetrachloride in products to be used indoors has been discontinued in the United States. The statewide emissions of carbon tetrachloride are small (about 1.96 tons per year), and background concentrations account for most of the health risk (ARB 2013).

The primary effects of carbon tetrachloride in humans are on the liver, kidneys, and central nervous system. Human symptoms of acute inhalation and oral exposures to carbon tetrachloride include headache, weakness, lethargy, nausea, and vomiting. Acute exposures to higher levels and chronic (long-term) inhalation or oral exposure to carbon tetrachloride produces liver and kidney damage in humans. Human data on the carcinogenic effects of carbon tetrachloride are limited. Studies in animals have shown that ingestion of carbon tetrachloride increases the risk of liver cancer. In California, carbon tetrachloride has been identified as a carcinogen.

Hexavalent chromium was identified as a TAC in 1986. Sources of Hexavalent chromium include industrial metal finishing processes, such as chrome plating and chromic acid anodizing, and firebrick lining of glass furnaces. Other sources include mobile sources, including gasoline motor vehicles, trains, and ships (ARB 2013).

The respiratory tract is the major target organ for hexavalent chromium toxicity, for acute and chronic inhalation exposures. Shortness of breath, coughing, and wheezing were reported from a case of acute exposure to hexavalent chromium, while perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects have been noted from chronic exposure. Human studies have clearly established that inhaled hexavalent chromium is a human carcinogen, resulting in an increased risk of lung cancer. In California, hexavalent chromium has been identified as a carcinogen.

Para-Dichlorobenzene was identified by the ARB as a TAC in April 1993. The primary area-wide sources that have reported emissions of para-dichlorobenzene include consumer products such as non-aerosol insect repellants and solid/gel air fresheners. These sources contribute nearly all of the statewide para-dichlorobenzene emissions (ARB 2013).

Acute exposure to paradichlorobenzene via inhalation results in irritation to the eyes, skin, and throat in humans. In addition, long-term inhalation exposure may affect the liver, skin, and central nervous system in humans. The U.S. EPA has classified para-dichlorobenzene as a possible human carcinogen.

Formaldehyde was identified by the ARB as a TAC in 1992. Formaldehyde is both directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Photochemical oxidation is the largest source of formaldehyde concentrations in California ambient air. Directly emitted formaldehyde is a product of incomplete combustion. One of the primary sources of directly-emitted formaldehyde is vehicular exhaust. Formaldehyde is also used in resins, can be found in many consumer products as an antimicrobial agent, and is also used in fumigants and soil disinfectants. The primary area sources of formaldehyde emissions include wood burning in residential fireplaces and wood stoves (ARB 2013).

Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute and chronic inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. Formaldehyde is classified as a probable human carcinogen.

Methylene Chloride was identified by the ARB as a TAC in 1987. Methylene chloride is used as a solvent, a blowing and cleaning agent in the manufacture of polyurethane foam and plastic fabrication, and as a solvent in paint stripping operations. Paint removers account for the largest use of methylene chloride in California, where methylene chloride is the main ingredient in many paint stripping formulations. Plastic product manufacturers, manufacturers of synthetics, and aircraft and parts manufacturers are stationary sources reporting emissions of methylene chloride (ARB 2013).

The acute effects of methylene chloride inhalation in humans consist mainly of nervous system effects including decreased visual, auditory, and motor functions, but these effects are reversible once exposure ceases. The effects of chronic exposure to methylene chloride suggest that the central nervous system is a potential target in humans and animals. Human data are inconclusive regarding methylene chloride and cancer. Animal studies have shown increases in liver and lung cancer and benign mammary gland tumors following the inhalation of methylene chloride. In California, methylene chloride has been identified as a carcinogen.

Perchloroethylene was identified by the ARB as a TAC in 1991. Perchloroethylene is used as a solvent, primarily in dry cleaning operations. Perchloroethylene is also used in degreasing operations, paints and coatings, adhesives, aerosols, specialty chemical production, printing inks, silicones, rug shampoos, and laboratory solvents. In California, the stationary sources that have reported emissions of perchloroethylene are dry cleaning plants, aircraft part and equipment manufacturers, and fabricated metal product manufacturers. The primary area sources include consumer products such as automotive brake cleaners and tire sealants and inflators (ARB 2013).

Acute inhalation exposure to perchloroethylene vapors can result in irritation of the upper respiratory tract and eyes, kidney dysfunction, and at lower concentrations, neurological effects, such as reversible mood and behavioral changes, impairment of coordination, dizziness, headaches sleepiness, and unconsciousness. Chronic inhalation exposure can result in neurological effects, including sensory symptoms such as headaches, impairments in cognitive and motor neurobehavioral functioning, and color vision decrements. Cardiac arrhythmia, liver damage, and possible kidney damage may also occur. In California, perchloroethylene has been identified as a carcinogen.

ASBESTOS

Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Serpentine rock often contains chrysotile asbestos. Serpentine rock, and its parent material, ultramafic rock, is abundant in the Sierra foothills, the Klamath Mountains, and Coast Ranges. The project site, however, is not located in an area of known ultramafic rock.

Additional sources of asbestos include building materials and other manmade materials, which are commonly referred to as asbestos-containing building materials (ACBMs). The most common sources are heat-resistant insulators, cement, furnace or pipe coverings, inert filler material, fireproof gloves and clothing, and brake linings. Asbestos has been used in the United States since the early 1900's; however, asbestos is no longer allowed as a constituent in most home products and materials. Many older buildings, schools, and homes still have asbestos containing products.

All types of asbestos are hazardous and may cause lung disease and cancer. Health risks to people are dependent upon their exposure to asbestos. The longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the chances for a health problem. Asbestos-related disease, such as lung cancer, may not occur for decades after breathing asbestos fibers. Cigarette smoking increases the risk of lung cancer from asbestos exposure.

REGULATORY FRAMEWORK

Air quality within the NCCAB is regulated by several jurisdictions including the U.S. EPA, ARB, and the MBARD. Each of these jurisdictions develops rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although U.S. EPA regulations may not be superseded, both state and local regulations may be more stringent.

FEDERAL

U.S. Environmental Protection Agency

At the federal level, the U.S. EPA has been charged with implementing national air quality programs. The U.S. EPA's air quality mandates are drawn primarily from the FCAA, which was signed into law in 1970. Congress substantially amended the FCAA in 1977 and again in 1990.

Federal Clean Air Act

The FCAA required the U.S. EPA to establish National Ambient Air Quality Standards (NAAQS), and also set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. NAAQS are summarized in Table 2.

The FCAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The FCAA Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The U.S. EPA has responsibility to review all state SIPs to determine conformance with the mandates of the FCAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If the U.S. EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) first authorized the U.S. EPA to regulate asbestos in public schools and Public and Commercial buildings under Title II of the law, which is also known as the Asbestos Hazard Emergency Response Act (AHERA). AHERA requires Local Education Agencies to inspect their schools for ACBM and prepare management plans to reduce the asbestos hazard. The Act also established a program for the training and accreditation of individuals performing certain types of asbestos work.

National Emission Standards for Hazardous Air Pollutants

Pursuant to the FCAA of 1970, the U.S. EPA established the National Emission Standards for Hazardous Air Pollutants. These are technology-based source-specific regulations that limit allowable emissions of HAPs.

STATE

California Air Resources Board

The ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act of 1988. Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts, establishing California Ambient Air Quality Standards (CAAQS), which in many cases are more stringent than the NAAQS, and setting emissions standards for new motor vehicles. The CAAQS are summarized in Table 2. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel and engine used.

Table 2
Summary of Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards*	National Standards* (Primary)
Ozone (O_3)	1-hour	0.09 ppm	–
	8-hour	0.070 ppm	0.070 ppm
Particulate Matter (PM_{10})	AAM	20 µg/m^3	–
	24-hour	50 µg/m^3	150 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	12 µg/m^3
	24-hour	No Standard	35 µg/m^3
Carbon Monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9 ppm	9 ppm
	8-hour (Lake Tahoe)	6 ppm	–
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppb
Sulfur Dioxide (SO_2)	AAM	–	0.03 ppm
	24-hour	0.04 ppm	0.14 ppm
	3-hour	–	0.5 ppm (1300 µg/m^3)**
	1-hour	0.25 ppm	75 ppb
Lead	30-day Average	1.5 µg/m^3	–
	Calendar Quarter	–	1.5 µg/m^3
	Rolling 3-Month Average	–	0.15 µg/m^3
Sulfates	24-hour	25 µg/m^3	No Federal Standards
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m^3)	
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient: 0.23/kilometer-visibility of 10 miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent.	

** For more information on standards visit: http//ww.arb.ca.gov.research/aaqs/aaqs2.pdf*
***Secondary Standard*
Source: ARB 2019c

California Clean Air Act

The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for Ozone, CO, SO_2, and NO_2 by the earliest practical date. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a five percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors, or (2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

California Assembly Bill 170

Assembly Bill 170, Reyes (AB 170), was adopted by state lawmakers in 2003 creating Government Code Section 65302.1 which requires cities and counties in the San Joaquin Valley to amend their general plans to include data and analysis, comprehensive goals, policies and feasible implementation strategies designed to improve air quality.

Assembly Bills 1807 & 2588 - Toxic Air Contaminants

Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

California Building Standards Code

The California Building Standards Code (CBSC), commonly referred to as Title 24, contains standards that regulate the method of use, properties, performance, or types of materials used in the construction, alteration, improvement, repair, or rehabilitation of a building or other improvement to real property. Included in the CBSC are energy efficiency standards, which are commonly referred to as green building standards or CalGreen standards. The CBSC is adopted every three years by the Building Standards Commission (BSC). In the interim, the BSC also adopts annual updates to make necessary mid-term corrections. The CBSC was most recently updated in 2013. The 2013 energy-efficiency standards are 25 percent more efficient than previous standards for residential construction and 30 percent more efficient for non-residential construction (CEC 2015).

MONTEREY BAY AIR RESOURCES DISTRICT

The MBARD is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded and that air quality conditions are maintained in the NCCAB, within which the project is located. Responsibilities of the MBARD include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution and responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the FCAA and the CCAA. In an attempt to achieve NAAQS and CAAQS and maintain air quality, the MBARD has most recently completed the *2012-2015 Air Quality Management Plan (AQMP)* for achieving the state ozone standards and the *2007 Federal Maintenance Plan* for maintaining federal ozone standards (MBARD 2017).

To achieve and maintain ambient air quality standards, the MBARD has adopted various rules and regulations for the control of airborne pollutants. The MBARD Rules and Regulations that are applicable to the proposed project include, but are not limited to, the following:

- Rule 402 (Nuisances). The purpose of this rule is to prohibit emissions that may create a public nuisance. Applies to any source operation that emits or may emit air contaminants or other materials.
- Rule 426 (Architectural Coatings). The purpose of this rule is to limit emissions of volatile organic compounds from architectural coatings.
- Rule 425 (Use of Cutback Asphalt). The purpose of this rule is to limit emissions of vapors of organic compounds from the use of cutback and emulsified asphalt. This rule applies to the manufacture and use of cutback, slow cure, and emulsified asphalt during paving and maintenance operations.
- Rule 424 (NESHAP-Asbestos) Rule 424 adopts the National Emissions Standards for Hazardous Air Pollutants contained in the Code of Federal Regulations (40 CFR Part 61) pertaining to asbestos removal and building demolitions.

REGULATORY ATTAINMENT DESIGNATIONS

The attainment status of the NCCAB is summarized in Table 3. An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation(s) was caused by an exceptional event, as defined in the criteria. Unclassified designations indicate insufficient data is available to determine attainment status.

Under the California Clean Air Act, the basin is designated as a nonattainment transitional area for the state ozone AAQS. The NCCAB is also designated a nonattainment area for the state PM_{10} AAQS. The NCCAB is designated either attainment or unclassified for the remaining state and federal AAQS.

Table 3
NCCAB Attainment Status Designations

Pollutant	State Designation [1]	National Designation
Ozone (O_3)	Nonattainment [2]	Attainment/Unclassified [3]
Inhalable Particulates (PM_{10})	Nonattainment	Attainment
Fine Particulates ($PM_{2.5}$)	Attainment	Attainment/Unclassified [4]
Carbon Monoxide (CO)	Monterey County – Attainment San Benito County – Unclassified Santa Cruz County - Unclassified	Attainment/Unclassified
Nitrogen Dioxide (NO_2)	Attainment	Attainment/Unclassified [5]
Sulfur Dioxide (SO_2)	Attainment	Attainment [6]
Lead	Attainment	Attainment/Unclassified [7]

Notes:
1) State designations based on 2010 to 2012 air monitoring data.
2) Effective July 26, 2007, the ARB designated the NCCAB a nonattainment area for the State ozone standard, which was revised in 2006 to include an 8-hour standard of 0.070 ppm.
3) On March 12, 2008, EPA adopted a new 8-hour ozone standard of 0.075 ppm. In April 2012, EPA designated the NCCAB attainment/unclassified based on 2009-2011 data.
4) This includes the 2006 24-hour standard of 35 µg/m3 and the 2012 annual standard of 12 µg/m3.
5) In 2012, EPA designated the entire state as attainment/unclassified for the 2010 NO2 standard.
6) In June 2011, the ARB recommended to EPA that the entire state be designated as attainment for the 2010 primary SO2 standard. Final designations to be addressed in future EPA actions.
7) On October 15, 2008, EPA substantially strengthened the national ambient air quality standard for lead by lowering the level of the primary standard from 1.5 µg/m3 to 0.15 µg/m3. Final designations were made by EPA in November 2011.
Source: MBARD 2015

AMBIENT AIR QUALITY

Air pollutant concentrations are measured at several monitoring stations in Monterey County. The "Salinas #3 Monitoring Station" is the closest representative monitoring site to the proposed project site with sufficient data to meet U.S. EPA and/or ARB criteria for quality assurance. This monitoring station monitors ambient concentrations of ozone, nitrogen dioxide, and $PM_{2.5}$. Ambient monitoring data for PM_{10} was obtained from the "King City 415 Pearl Street Monitoring Station." Carbon monoxide data was not available for Monterey County or its monitoring stations. Ambient monitoring data for the last three years of available measurement data (i.e., 2015 through 2017) are summarized in Table 4. As depicted, state and federal standards for ozone and nitrogen dioxide did not exceed from 2015 to 2017.

Table 4
Summary of Ambient Air Quality Monitoring Data[1]

	2015	2016	2017
Ozone			
Maximum concentration, ppm (1-hour/8-hour average)	0.068/0.061	0.066/0.058	0.082/0.070
Number of days state/national 1-hour standard exceeded	0/0	0/0	0/0
Number of days state/national 8-hour standard exceeded	0/0	0/0	0/0
Nitrogen Dioxide (NO_2)			
Maximum concentration, ppm (1-hour average)	33	33	34
Annual average	5	4	4
Number of days state/national standard exceeded	0/0	0/0	0/0
Suspended Particulate Matter (PM_{10})[3]			
Maximum concentration, µg/m³ (state/national)	72.6	71.4	95.3
Annual Average	24.5	26.0	29.3
Number of days state/national standard exceeded	*/0	*/0	*/0
Suspended Particulate Matter ($PM_{2.5}$)			
Maximum concentration, µg/m³ (state/national)	22.6	28.7	42.2
Annual Average	4.5	5.2	5.6
Number of days national standard exceeded (measured/calculated[2])	0/0	0/0	1/1

ppm = parts per million by volume, µg/m³ = micrograms per cubic meter
1. Ambient data was obtained from the Salinas #3 Monitoring Station.
2. Measured days are those days that an actual measurement was greater than the standard. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day.
3. Based on data obtained from the King City-415 Pearl Street Monitoring Station.
** = Insufficient data available to determine the value.*
Source: ARB 2019a

SENSITIVE RECEPTORS

One of the most important reasons for air quality standards is the protection of those members of the population who are most sensitive to the adverse health effects of air pollution, termed "sensitive receptors." The term sensitive receptors refer to specific population groups, as well as the land uses where individuals would reside for long periods. Commonly identified sensitive population groups are children, the elderly, the acutely ill, and the chronically ill. Commonly identified sensitive land uses would include facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Residential dwellings, schools, parks, playgrounds, childcare centers, convalescent homes, and hospitals are examples of sensitive land uses.

Nearby noise-sensitive receptors include students located at Dr. Oscar F. Loya Elementary School, as well as, occupants of nearby residential dwellings. The nearest residential dwellings are located adjacent to the project site, along the northern and eastern boundaries of the project site. Residential uses are also located to the west of the project site, across Buckhorn Drive, and to the south of the project site, across Falcon Drive. In addition, a recreational field at Dr. Oscar F. Loya Elementary School is located 60 feet southeast from the project site. Nearby land uses are depicted in Figure 2.

PROJECT IMPACTS

THRESHOLDS OF SIGNIFICANCE

Criteria for determining the significance of air quality impacts were developed based on information contained in the California Environmental Quality Act Guidelines (CEQA Guidelines, Appendix G). According to those guidelines, a project may have a significant effect on the environment if it would result in the following conditions:

1. Conflict with or obstruct implementation of any applicable air quality plan.
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
4. Expose sensitive receptors to substantial pollutant concentrations.
5. Create objectionable odors affecting a substantial number of people.

To assist local jurisdictions in the evaluation of air quality impacts, the MBARD has published the *CEQA Air Quality Guidelines* (MBARD 2008). This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction, long-term operational, odor, toxic air contaminant, and cumulative air quality impacts. The following MBARD-recommended thresholds of significance were relied upon for determination of impact significance:

- Short-term Emissions of Criteria Air Pollutants. Construction impacts would be significant if the proposed project would emit greater than 82 pounds per day (lbs/day) of PM_{10}, or will cause a violation of PM_{10} National or State AAQS at nearby receptors. Construction-generated emissions of ozone precursors (i.e., ROG or NO_X) are accommodated in the emission inventories of State and federally-required air plans. For this reason, the MBARD has not identified recommended thresholds of significance for construction-generated ozone precursors.
- Long-Term Emissions of Criteria Air Pollutants. Operational impacts would be considered potentially significant if direct and indirect emissions would exceed 137 lbs/day of either ROG or NO_X, 82 lbs/day of PM_{10}, or if the project would contribute to local PM_{10} concentrations that exceed Ambient Air Quality Standards. Emissions of SO_X would be significant if the project generates direct emissions of greater than 150 lbs/day;
- Local Mobile-Source CO Concentrations. Local mobile-source impacts would be significant if the project generates direct emissions of greater than 550 lbs/day of CO or if the project would contribute to local CO concentrations that exceed the State Ambient Air Quality Standard of 9.0 ppm for 8 hours or 20 ppm for 1 hour. (Indirect emissions are typically considered to include mobile sources that access the project site but generally emit off-site; direct emissions typically include sources that emitted on-site (e.g., stationary sources, on-site mobile equipment).
- Toxic Air Contaminants. TAC impacts would be significant if the project would expose the public to substantial levels of TACs so that the probability of contracting cancer for the Maximally Exposed Individual would exceed 10 in 1 million and/or so that ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index greater than 1 for the Maximally Exposed Individual.
- Odorous Emissions. Odor impacts would be significant if the project has the potential to frequently expose members of the public to objectionable odors.

METHODOLOGY

Short-term Construction Impacts

Short-term emissions were quantified using the California Emissions Estimator Model (CalEEMod), version 2016.3.2, based on estimated building square footage provided for the proposed project. Other modeling assumptions, including construction equipment requirements, hours of use, worker and vendor vehicle trips, trips distances and fleet mix were based on model defaults for Monterey County. In addition, it is assumed that the earliest year of operation for the project will occur in 2020. Refer to Appendix A for emissions modeling assumptions and results. Localized air quality impacts were qualitatively assessed.

Long-term Operational Air Quality Impacts

Long-term emissions were quantified using CalEEMod, version 2016.3.2, based on estimated building square footage, parking, and student population. Vehicle trip-generation rates were derived from the traffic analysis prepared for this project (JLB 2019). Energy intensity factors were adjusted to reflect compliance with Renewable Portfolio Standards requirements. Other modeling assumptions, including vehicle trip distances and vehicle fleet mix were based on CalEEMod model defaults for Monterey County. Refer to Appendix A for emissions modeling assumptions and results. Localized air quality impacts were qualitatively assessed.

PROJECT IMPACTS

Impact AQ-1: Conflict with or obstruct implementation of any applicable air quality plan.

Consistency with the Air Quality Management Plan (AQMP) is assessed by comparing the anticipated growth associated with a proposed project with the population and dwelling unit forecasts adopted by the Association of Monterey Bay Area Governments (AMBAG). These projections are used to generate emission forecasts upon which the AQMP is based. Project's which are consistent with AMBAG's regional forecasts would be considered consistent with the AQMP (MBARD 2017). In addition, projects that would result in a significant increase in emissions, in excess of MBARD significance thresholds, would also be considered to potentially conflict with or obstruct implementation of the AQMP.

The proposed project would not result in a substantial increase in population. Furthermore, the project would serve children located within the existing community, substantial increases in regional vehicle miles traveled are not anticipated to occur with project implementation. As noted in Impact 3, the proposed project would not result in a significant increase in emissions. For these reasons, implementation of the proposed project is not anticipated to result in a substantial increase in either direct or indirect emissions that would conflict with or obstruct implementation of the AQMP. This impact is considered *less than significant*. No mitigation is required. (Refer to Impacts AQ-3 and AQ-4 for additional discussion of air quality impacts.)

Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

As discussed in Impacts AQ-3 and AQ-4, implementation of the proposed project would not result in short-term or long-term increases in emissions that would violate any air quality standard or contribute to an existing or projected air quality violation. As a result, this impact is considered *less than significant*. No mitigation is required. (Refer to Impacts AQ-3 and AQ-4 for additional discussion of air quality impacts.)

Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Construction Emissions

Construction-generated emissions are short-term and of temporary duration, lasting only as long as construction activities occur, but possess the potential to represent a significant air quality impact. The construction of the proposed uses would result in the temporary generation of emissions resulting from demolition, site grading and preparation, building construction, asphalt paving, application of architectural coatings, and motor vehicle exhaust associated with construction equipment and on-road vehicle trips. Emissions of PM are largely associated with ground disturbance and the movement of construction vehicles and equipment on unpaved surfaces.

Construction-generated emissions associated with the project development are summarized in Table 5. As depicted, development of the proposed project would generate maximum daily PM_{10} emissions of approximately 1.4 lbs/day, or less. Emissions of PM would largely occur during grading activities. Construction activities would not generate PM_{10} emissions that would exceed the MBARD's significance threshold of 82 lbs/day. Furthermore, compliance with existing MBARD rules and regulations, such as Rule 402 (Nuisances), Rule 426 (Architectural Coatings), and Rule 425 (Use of Cutback Asphalt) would further minimize potential short-term air quality impacts. As a result, short-term construction activities would be considered to have a *less-than-significant* air quality impact. No mitigation is required.

Table 5
Construction Emissions - Uncontrolled

Construction Activity	Emissions (lbs/day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Demolition	1.0	8.7	0.6	0.5
Site Preparation	0.7	8.9	0.9	0.4
Grading	1.0	8.7	1.4	0.9
Building Construction	1.0	10.3	0.7	0.6
Paving	1.0	7.9	0.6	0.5
Architectural Coating Application	23.8	1.8	0.1	0.1
Maximum Daily Emissions:	23.8	10.3	1.4	0.9
MBARD Significance Threshold[1]:	-	-	82	-
Exceeds Threshold/Significant Impact?	NA	NA	No	NA

1. The MBARD has not identified significance thresholds for ROG, NOX, or PM2.5. Emissions of ROG and NOX are accommodated in the emission inventories of State- and federally-required air plans and would not have a significant impact on the attainment and maintenance of ozone AAQS. Emissions of PM2.5 are a component of PM10.
Refer to Appendix A for emissions modeling assumptions and results.

Operational Emissions

Daily operational emissions associated with the proposed project are summarized in Table 6. At buildout, the proposed project would generate approximately 0.5 lbs/day of ROG, 1.3 lbs/day of NO_X, 3.2 lbs/day of CO, less than 0.1 lbs/day of SO_2, 0.4 lbs/day of PM_{10}, and 0.1 lbs/day of $PM_{2.5}$. Operational emissions are projected to decline in future years due primarily to improvements in vehicle efficiency and reductions in energy use-related emissions. Daily operational emissions would not exceed applicable MBARD significance thresholds. Long-term operation of the proposed project would be considered to have a *less-than-significant* air quality impact. No mitigation is required.

Table 6
Operational Emissions

Project Phase	Emissions (lbs/day)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Buildout	0.5	1.3	3.2	< 0.1	0.4	0.1
MBARD Significance Threshold:	137	137	550	150	82	-
Exceeds Threshold/Significant Impact?	No	No	No	No	No	NA

Refer to Appendix A for emissions modeling assumptions and results.

Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations.

With regard to public health and welfare, both the U.S. EPA and the State of California have developed AAQS for various pollutants. These standards define the maximum amount of an air pollutant that can be present in ambient air. An AAQS is generally specified as a concentration averaged over a specific time period, such as one hour, eight hours, 24 hours, or one year. The different averaging times and concentrations are meant to protect against different exposure effects. In general, the standards adopted by the State of California are equivalent to or more health-protective than the national standards established by the U.S. EPA.

To assist local jurisdictions with the evaluation of localized pollutant concentrations and potential health-related impacts, MBARD has developed recommended thresholds of significance and screening criteria for the pollutants of primary concern (e.g., PM_{10}, CO, TACs). Accordingly, project-generated emissions of PM_{10} that exceed 82 pounds per day (lbs/day) could result in a violation of PM_{10} AAQS at nearby receptors, which could result in health-related impacts to nearby receptors. In addition, ground-level concentrations of TACs that would result in an incremental increase in cancer risk of 10 in 1 million or a Hazard Index greater than 1 for the Maximally Exposed Individual would also be considered to result in a potentially significant impact to human health. Projects that contribute to or result in decreased levels of service (LOS) of E, or worse, at signalized intersections may contribute to localized CO concentrations that could exceed AAQS, which may result in health-related impacts to nearby individuals. Other pollutants of localized concern include exposure to naturally-occurring asbestos.

Short-term and long-term pollutants of primary concern with regard to potential health-related impacts include construction-generated emissions of TACs, naturally-occurring asbestos, particulate matter, and carbon monoxide. Short-term and long-term localized air quality impacts are discussed in greater detail, as follows:

Short-term Exposure

Implementation of the proposed project would result in short-term emissions of fugitive PM associated with project construction. Localized pollutants of primary concern typically associated with construction projects are commonly associated with increased emissions of PM generated by ground disturbance, including site preparation and grading. Compliance with applicable MBARD rules and regulations, including but not limited to, Rule 402 for the control of nuisance–related emissions and Rule 424 for the handling of asbestos-containing building materials would minimize potential impacts to occupants of nearby land uses. For these reasons, construction activities would be considered to have a *less-than-significant* short-term impact on nearby sensitive receptors. No mitigation is required.

Long-term Exposure

Implementation of the proposed project would not result in the installation of any major stationary sources of emissions. As a result, CO generated by mobile sources would be considered the primary pollutant of local concern. Mobile-source emissions of CO are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. However, under specific meteorological and operational conditions, such as near areas of heavily congested vehicle traffic, CO concentrations may reach unhealthy levels. If inhaled, CO can be adsorbed easily by the bloodstream and can inhibit oxygen delivery to the body, which can cause significant health effects ranging from slight headaches to death. The most serious effects are felt by individuals susceptible to oxygen deficiencies, including people with anemia and those suffering from chronic lung or heart disease. For this reason, localized mobile-source CO concentrations are of potential concern near signalized intersections that experience high traffic volumes/vehicle congestion and are projected to operate at unacceptable levels of service (i.e., LOS E, or worse).

Based on the traffic analysis prepared for the proposed project, intersections in the project area are projected to operate at LOS D, or better during the peak commute hours (Table 7). In comparison to the CO screening criteria, implementation of the proposed project would not result in or contribute to unacceptable levels of service (i.e., LOS E, or worse) at primarily affected intersections. For this reason and given Monterey County's attainment for CO concentrations, implementation of the proposed project would not result in or contribute to localized mobile-source CO concentrations that would be projected to exceed applicable ambient air quality standards. This impact would be considered *less than significant*. No mitigation is required.

Table 7
Levels of Service for Primarily Affected Intersections

Intersection	Existing + Project AM/PM Peak Hour		Cumulative 2020 + Project AM/PM Peak Hour	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Freedom Parkway/Sanborn Road	B/B	18/17	C/C	22/20
Buckhorn Drive/Sanborn Road	C/C	19/18	D/D	29/27
Buckhorn Drive/Project Driveway	A/A	9/9	A/A	9/9
Buckhorn Drive/Falcon Drive	B/A	12/9	B/A	12/10
Freedom Parkway/Cougar Drive	D/C	34/16	D/C	32/20

Includes implementation of proposed intersection control mitigation measures.
LOS = Level of Service
Source: JLB 2019

Impact AQ-5: Create objectionable odors affecting a substantial number of people.

Implementation of the proposed project would not result in the installation of any major sources of odors. In addition, no major sources of odors have been identified in the vicinity of the project site. As a result, implementation of the proposed project would not result in the long-term exposure of individuals to increased concentrations of odors. However, construction of the proposed facilities would involve the use of a variety of gasoline or diesel-powered equipment that would emit exhaust fumes. Exhaust fumes, particularly diesel-exhaust, may be considered objectionable by some people. In addition, pavement coatings and architectural coatings used during project construction would also emit temporary odors. However, construction-generated emissions would occur intermittently and would dissipate rapidly within increasing distance from the source. As a result, short-term construction activities would not expose a substantial number of people to frequent odorous emissions. For these reasons, this impact would be considered less than significant. No mitigation is required.

GREENHOUSE GASES AND CLIMATE CHANGE

EXISTING SETTING

To fully understand global climate change, it is important to recognize the naturally occurring "greenhouse effect" and to define the GHGs that contribute to this phenomenon. Various gases in the earth's atmosphere, classified as atmospheric GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space and a portion of the radiation is absorbed by the earth's surface. The earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Primary GHGs attributed to global climate change, are discussed, as follows:

- Carbon Dioxide. Carbon dioxide (CO_2) is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere (U.S. EPA 2016).

- Methane. Methane (CH_4) is a colorless, odorless gas that is not flammable under most circumstances. CH_4 is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. Methane is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (enteric fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of methane to the atmosphere. Natural sources of methane include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. Methane's atmospheric lifetime is about 12 years (U.S. EPA 2016).

- Nitrous Oxide. Nitrous oxide (N_2O) is a clear, colorless gas with a slightly sweet odor. N_2O is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years (U.S. EPA 2016).

- Fluorinated Gases. Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are man-made chemicals, many of which have been developed as alternatives to ozone-depleting substances for industrial, commercial, and consumer products. The only significant emissions of HFCs before 1990 were of the chemical HFC-23, which is generated as a byproduct of the production of HCFC-22 (or Freon 22, used in air conditioning applications). The atmospheric lifetime for HFCs varies from just over a year for HFC-152a to 260 years for HFC-23. Most of the commercially used HFCs have atmospheric lifetimes of less than 15 years (e.g., HFC-134a, which is used in automobile air conditioning and refrigeration, has an atmospheric life of 14 years) (U.S. EPA 2016).

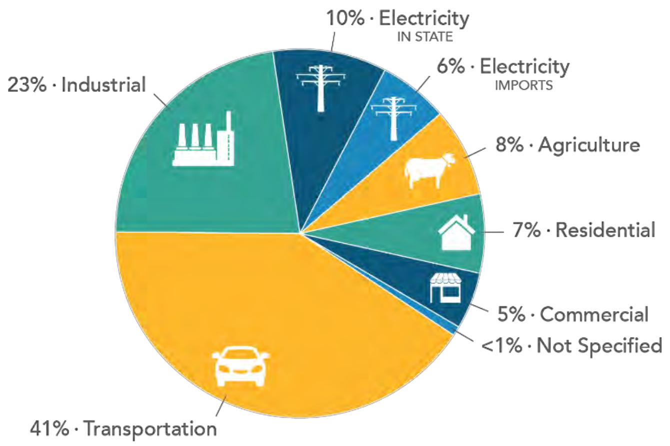
Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. Gases with high global warming potential, such as HFCs, PFCs, and SF_6, are the most heat-absorbent. Over a 100-year timeframe, CH_4 traps over 28 times more heat per molecule than CO_2, and N_2O absorbs approximately 265 times more heat per molecule than CO_2. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e), which weight each gas by its global warming potential. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted (EPA 2016).

SOURCES OF GHG EMISSIONS

On a global scale, GHG emissions are predominantly associated with activities related to energy production; changes in land use, such as deforestation and land clearing; industrial sources; agricultural activities; transportation; waste and wastewater generation; and commercial and residential land uses. Worldwide, energy production including the burning of coal, natural gas, and oil for electricity and heat is the largest single source of global GHG emissions (U.S. EPA 2016).

In 2016, GHG emissions within California totaled 429.4 million metric tons of carbon dioxide equivalents (MMTCO_2e). Within California, the transportation sector is the largest contributor, accounting for roughly 41 percent of the total state-wide GHG emissions. Emissions associated with the industrial sector are the second largest contributor, totaling approximately 23 percent. Emissions from in-state electricity generation, imported electricity, agriculture, residential, and commercial uses constitute the remaining major sources on GHG emissions. In comparison to the year 2014 emissions inventory, overall GHG emissions in California decreased by 12 MMTCO2e. The State of California GHG emissions inventory for year 2016, by main economic sector, is depicted in Figure 4.

Figure 4
State of California Greenhouse Gases Emissions Inventory by Main Economic Sector



Emissions inventory is categorized based on main economic sector. "Not Specified" includes sources that could not be attributed to an individual sector, such as evaporative losses and emissions from use of ozone-depleting substances.
Source: ARB 2019b

EFFECTS OF GLOBAL CLIMATE CHANGE

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, increased air pollution episodes, and the consequence of these effects on the economy.

Within California, climate changes would likely alter the ecological characteristics of many ecosystems throughout the state. Such alterations would likely include increases in surface temperatures and changes in the form, timing, and intensity of precipitation. For instance, historical records are depicting an increasing trend toward earlier snowmelt in the Sierra Nevada. This snowpack is a principal supply of water for the state, providing roughly 50 percent of the state's annual runoff. If this trend continues, some areas of the state may experience an increased danger of floods during the winter months and possible exhaustion of the snowpack during spring and summer months. An earlier snowmelt would also impact the State's energy resources. Currently, approximately 20 percent of California's electricity comes from hydropower. An early exhaustion of the Sierra snowpack, may force electricity producers to switch to more costly or non-renewable forms of electricity generation during spring and summer months. A changing climate may also impact agricultural crop yields, coastal structures, and biodiversity. As a result, resultant changes in climate will likely have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry (CCCC 2012).

REGULATORY FRAMEWORK

FEDERAL

INTERNATIONAL REGULATION AND THE KYOTO PROTOCOL

The United States participates in the United Nations Framework Convention on Climate Change (UNFCCC). While the United States signed the Kyoto Protocol, which would have required reductions in GHGs, Congress never ratified the protocol. The federal government chose voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science. In 2002, the United States announced a strategy to reduce the greenhouse gas intensity of the American economy by 18 percent over a 10-year period from 2002 to 2012.

As part of the commitments to the UNFCCC, the U.S. EPA has developed an inventory of anthropogenic emissions by sources and removals by sinks of all GHGs. This inventory is periodically updated, with the latest update in 2010. The U.S. EPA reports that total US emissions rose by 14 percent from 1990 to 2007, while the US gross domestic product increased by 59 percent over the same period. A 2.9 percent decrease in emissions was noted from 2007 to 2008, which is reported to be attributable to climate conditions, reduced use of petroleum products for transportation, and increased use of natural gas over other fuel sources. The inventory notes that the transportation sector emits about 32 percent of CO_2 emissions, with 53 percent of those emissions coming from personal automobile use. Residential uses, primarily from energy use, accounted for 21 percent of CO_2 emissions (U.S. EPA 2015a).

As a part of the U.S. EPA's responsibility to develop and update an inventory of U.S. GHG emissions and sinks, the U.S. EPA compared trends of other various US data. Over the period between 1990 and 2008, GHG emissions grew at an average rate of about 0.7 percent per year. Population growth was slightly higher at 1.1 percent, while energy and fossil fuel consumption grew at 0.9 and 0.8 percent, respectively. Gross domestic product and energy generation grew at much higher rates.

Executive Order 13514

Executive Order (EO) 13514 is focused on reducing GHGs internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

On April 2, 2007, in Massachusetts v. U.S. EPA, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act and that the U.S. EPA has the authority to regulate GHG. The Court held that the U.S. EPA Administrator must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator found that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which was published on September 15, 2009. On May 7, 2010, the final *Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards* was published in the Federal Register.

U.S. EPA and the National Highway Traffic Safety Administration are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations. These steps were outlined by President Obama in a Presidential Memorandum on May 21, 2010.

The final combined U.S. EPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, (the equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements). Together, these standards will cut GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016). On November 16, 2011, U.S. EPA and NHTSA issued their joint proposal to extend this national program of coordinated greenhouse gas and fuel economy standards to model years 2017 through 2025 passenger vehicles (Caltrans 2015).

STATE

Assembly Bill 1493

Assembly Bill (AB) 1493 (Pavley) of 2002 (Health and Safety Code Sections 42823 and 43018.5) requires the California Air Resources Board (ARB) to develop and adopt the nation's first GHG emission standards for automobiles. These standards are also known as Pavley I. The California Legislature declared in AB 1493 that global warming is a matter of increasing concern for public health and the environment. It cites several risks that California faces from climate change, including a reduction in the state's water supply, an increase in air pollution caused by higher temperatures, harm to agriculture, an increase in wildfires, damage to the coastline, and economic losses caused by higher food, water, energy, and insurance prices. The bill also states that technological solutions to reduce GHG emissions would stimulate California's economy and provide jobs. In 2004, the State of California submitted a request for a waiver from federal clean air regulations, as the State is authorized to do under the Clean Air Act, to allow the State to require reduced tailpipe emissions of CO_2. In late 2007, the U.S. EPA denied California's waiver request and declined to promulgate adequate federal regulations limiting GHG emissions. In early 2008, the State brought suit against the U.S. EPA related to this denial.

In January 2009, President Obama instructed the U.S. EPA to reconsider the Bush Administration's denial of California's and 13 other states' requests to implement global warming pollution standards for cars and trucks. In June 2009, the U.S. EPA granted California's waiver request, enabling the State to enforce its GHG emissions standards for new motor vehicles beginning with the current model year.

Also in 2009, President Obama announced a national policy aimed at both increasing fuel economy and reducing GHG pollution for all new cars and trucks sold in the US. The new standards would cover model years 2012 to 2016 and would raise passenger vehicle fuel economy to a fleet average of 35.5 miles per gallon by 2016. When the national program takes effect, California has committed to allowing automakers who show compliance with the national program to also be deemed in compliance with state requirements. California is committed to further strengthening these standards beginning in 2017 to obtain a 45 percent GHG reduction from the 2020 model year vehicles.

Executive Order No. S-3-05

EO S-3-05 proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, to the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

EO No. S-3-05 directed the secretary of the California Environmental Protection Agency to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The secretary will also submit biannual reports to the governor and state legislature describing (1) progress made toward reaching the emission targets, (2) impacts of global warming on California's resources, and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the secretary of CalEPA created a Climate Action Team made up of members from various state agencies and commissions. The Climate Action Team released its first report in March 2006 and continues to release periodic reports on progress. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

Executive Order No. S-01-07

EO S-1-07, the Low Carbon Fuel Standard (LCFS) was issued on January 18, 2007 and called for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. This order instructed the CalEPA to coordinate activities between the University of California, the California Energy Commission (CEC) and other state agencies to develop and propose a draft compliance schedule to meet the 2020 target. Furthermore, it directed ARB to consider initiating regulatory proceedings to establish and implement the LCFS. In response, ARB adopted the LCFS regulation in 2010.

Assembly Bill 32 - California Global Warming Solutions Act of 2006

AB 32 requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. The gases that are regulated by AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, nitrogen trifluoride, and sulfur hexafluoride. The reduction to 1990 levels will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that ARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap, institute a schedule to meet the emissions cap, and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Climate Change Scoping Plan

In October 2008, ARB published its *Climate Change Proposed Scoping Plan*, which is the State's plan to achieve GHG reductions in California required by AB 32. This initial Scoping Plan contained the main strategies to be implemented in order to achieve the target emission levels identified in AB 32. The Scoping

Plan included ARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The largest proposed GHG reduction recommendations were associated with improving emissions standards for light-duty vehicles, implementation of the Low Carbon Fuel Standard program, energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems, and a renewable portfolio standard for electricity production.

A key component of the Scoping Plan is the Renewable Portfolio Standard, which is intended to increase the percentage of renewables in California's electricity mix to 33 percent by year 2020, resulting in a reduction of 21.3 MMTCO$_2$*e*. Sources of renewable energy include, but are not limited to, biomass, wind, solar, geothermal, hydroelectric, and anaerobic digestion. Increasing the use of renewables will decrease California's reliance on fossil fuels, thus reducing GHG emissions.

The Scoping Plan states that land use planning and urban growth decisions will play important roles in the state's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. ARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emissions sectors. With regard to land use planning, the Scoping Plan expects approximately 5.0 MMTCO$_2$*e* will be achieved associated with implementation of Senate Bill 375, which is discussed further below.

The initial Scoping Plan was first approved by ARB on December 11, 2008 and is updated every five years. The first update of the Scoping Plan was approved by the ARB on May 22, 2014, which looked past 2020 to set mid-term goals (2030-2035) on the road to reach the 2050 goals. ARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target established in SB 32 and EO B-30-15.

Senate Bill 1368

Senate Bill (SB) 1368 (codified at Public Utilities Code Chapter 3) is the companion bill of AB 32. SB 1368 required the California Public Utilities Commission (CPUC) to establish a greenhouse gas emissions performance standard for baseload generation from investor-owned utilities by February 1, 2007. The bill also required the California Energy Commission (CEC) to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and the CEC.

Senate Bill 1078 and Governor's Order S-14-08 (California Renewables Portfolio Standards)

SB 1078 (Public Utilities Code Sections 387, 390.1, 399.25 and Article 16) addresses electricity supply and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide a minimum 20 percent of their supply from renewable sources by 2017. This Senate Bill will affect statewide GHG emissions associated with electricity generation. In 2008, Governor Schwarzenegger signed Executive Order S-14-08, which set the Renewables Portfolio Standard target to 33 percent by 2020. It directed state government agencies and retail sellers of electricity to take all appropriate actions to implement this target. Executive Order S-14-08 was later superseded by Executive Order S-21-09 on September 15, 2009. Executive Order S-21-09 directed ARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. This Executive Order was superseded by statute SB X1-2 in 2011, which obligates all California electricity providers, including investor-owned utilities and publicly owned utilities, to obtain at least 33 percent of their energy from renewable electrical generation facilities by 2020, with interim targets of 20 percent by 2013 and 25 percent by 2016.

ARB is required by current law, AB 32 of 2006, to regulate sources of GHGs to meet a state goal of reducing greenhouse gas emissions to 1990 levels by 2020 and an 80 percent reduction of 1990 levels by 2050. The CEC and CPUC serve in advisory roles to help ARB develop the regulations to administer the 33 percent by 2020 requirement. ARB is also authorized to increase the target and accelerate and expand the time frame.

Mandatory Reporting of Greenhouse Gas Emissions

Reporting of GHGs by major sources is required by the California Global Warming Solutions Act (AB 32, 2006). Revisions to the existing ARB mandatory GHG reporting regulation were considered at the board hearing on December 16, 2010. The revised regulation was approved by the California Office of Administrative Law and became effective on January 1, 2012. The revised regulation affects industrial facilities, suppliers of transportation fuels, natural gas, natural gas liquids, liquefied petroleum gas, and carbon dioxide, operators of petroleum and natural gas systems, and electricity retail providers and marketers.

Cap-and-Trade Regulation

The cap-and-trade regulation is a key element in California's climate plan. It sets a statewide limit on sources responsible for 85 percent of California's greenhouse gas emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The cap-and-trade rules came into effect on January 1, 2013, and apply to large electric power plants and large industrial plants. In 2015, they will extend to fuel distributors (including distributors of heating and transportation fuels). At that stage, the program will encompass around 360 businesses throughout California and nearly 85 percent of the state's total greenhouse gas emissions.

Under the cap-and-trade regulation, companies must hold enough emission allowances to cover their emissions, and are free to buy and sell allowances on the open market. California held its first auction of greenhouse gas allowances on November 14, 2012. California's GHG cap-and-trade system will reduce GHG emissions from regulated entities by approximately 16 percent, or more, by 2020.

California Building Code

The California Building Code (CBC) contains standards that regulate the method of use, properties, performance, or types of materials used in the construction, alteration, improvement, repair, or rehabilitation of a building or other improvement to real property. The California Building Code is adopted every three years by the Building Standards Commission (BSC). In the interim, the BSC also adopts annual updates to make necessary mid-term corrections. The CBC standards apply statewide; however, a local jurisdiction may amend a CBC standard if it makes a finding that the amendment is reasonably necessary due to local climatic, geological, or topographical conditions.

Green Building Standards

In essence, green buildings standards are indistinguishable from any other building standards. Both are contained in the California Building Code and regulate the construction of new buildings and improvements. The only practical distinction between the two is that whereas the focus of traditional building standards has been protecting public health and safety, the focus of green building standards is to improve environmental performance.

AB 32, which mandates the reduction in greenhouse gas emissions in California to 1990 levels by 2020, increased the urgency around the adoption of green building standards. In its scoping plan for the implementation of AB 32, ARB identified energy use as the second largest contributor to California's GHG emissions, constituting roughly 25 percent of all such emissions. In recommending a green building strategy as one element of the scoping plan, ARB estimated that green building standards would reduce GHG emissions by approximately 26 million metric tons of CO_2e ($MMTCO_2e$) by 2020.

The green buildings standards, commonly referred to as CalGreen standards, were most recently updated in 2013. The 2013 building energy efficiency standards are 25 percent more efficient than previous standards for residential construction and 30 percent more efficient for non-residential construction (CEC 2015).

Senate Bill 32

SB 32 was signed by Governor Brown on September 8, 2016. SB 32 effectively extends California's GHG emission-reduction goals from year 2020 to year 2030. This new emission-reduction target of 40 percent below 1990 levels by 2030 is intended to promote further GHG-reductions in support of the State's ultimate goal of reducing GHG emissions by 80 percent below 1990 levels by 2050. SB 32 also directs the ARB to update the Climate Change Scoping Plan to address this interim 2030 emission-reduction target.

Senate Bill 375 (Sustainable Communities and Climate Protection Act)

SB 375 supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of developing more sustainable communities. Under SB 375, ARB sets regional targets for GHG emissions reductions associated with passenger vehicle use. Each of California's metropolitan planning organizations must prepare a "sustainable communities strategy" (SCS) as an integral part of its regional transportation plan (RTP). The SCS contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet its GHG emission reduction targets. The Sustainable Communities Act also establishes incentives to encourage local governments and developers to implement the identified GHG-reduction strategies.

PROJECT IMPACTS

THRESHOLDS OF SIGNIFICANCE

In accordance with CEQA Guidelines, a project would be considered to have a significant impact to climate change if it would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or,

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As of March 2019, the MBARD Board of Directors has not adopted recommended GHG significance thresholds applicable to development projects. However, it is important to note that other air districts within the State of California have adopted recommended CEQA significance thresholds for GHG emissions. For instance, on March 28, 2012, the San Luis Obispo Air Pollution Control District (SLOAPCD) Board approved thresholds of significance for the evaluation of project-related increases of GHG emissions. The SLOAPCD's significance thresholds include both qualitative and quantitative threshold options, which include a bright-line threshold of 1,150 $MTCO_2e$/year. The Sacramento Metropolitan Air Quality Management District (SMAQMD) have adopted similar significance thresholds of 1,100 $MTCO_2e$/year. The GHG significance thresholds are based on AB 32 GHG emission reduction goals, which take into consideration the emission reduction strategies outlined in ARB's Scoping Plan. Development projects located within these jurisdictions that would exceed these thresholds would be considered to have a potentially significant impact on the environment which could conflict with applicable GHG-reduction plans, policies and regulations. Projects with GHG emissions that do not exceed the applicable threshold would be considered to have a less-than-significant impact on the environment and would not be anticipated to conflict with AB 32 GHG emission reduction goals.

The MBARD recommends the use of other thresholds, such as those adopted by the SLOAPCD. For purposes of this analysis, project-generated emissions in excess of 1,100 $MTCO_2e$/year would be considered to have a potentially significant impact. This mass-emission threshold is based on thresholds adopted by SMAQMD, which is slightly more conservative than the threshold recommended by SLOAPCD.

Alternatively, GHG impacts on individual development projects can also be evaluated using GHG-efficiency metrics. In general, GHG-efficiency metrics can be used to assess the GHG efficiency of an individual project based on a per capita basis or on a service population basis. For instance, a GHG efficiency threshold based on service population can be calculated by dividing the GHG emissions inventory goal (allowable emissions), by the estimated service population of the individual project. For most development projects, service population is traditionally defined as the sum of the number of jobs and the number of residents provided by a project. However, this traditional definition of service population may not be applicable to all development projects, depending on the end use. For instance, with regard to schools, the student population is the primary generator of GHG emissions with a majority of the school's emissions being associated with student-related vehicle trips.

For purposes of this analysis, a GHG-efficiency threshold was also applied for the evaluation of potential GHG impacts. The project's calculated GHG efficiency was based on the calculated GHG emissions and associated student population. The methodology used for quantification of the target efficiency threshold applied to the proposed project is summarized in Table 8. Project-generated GHG emissions that would exceed the efficiency threshold of 4.9 $MTCO_2e$ per service population ($MTCO_2e$/SP/year) would be considered to have a potentially significant impact on the environment that could conflict with GHG-reduction planning efforts. To be conservative, construction-generated GHG emissions were amortized based on an estimated 25-year project life and included in annual net increases in operational GHG emissions estimates.

Table 8
Project-Level GHG Efficiency Threshold Calculation

Land Use Sectors GHG Emissions Target[1]	287,000,000
Population[2]	40,619,346
Employment[3]	18,195,720
Service Population	58,815,066
GHG Efficiency Threshold ($MTCO_2e$/SP/yr)	4.9

Based on AB 32 Scoping Plan's land use inventory sectors for year 2020; Includes transportation sources.
Land Use-driven sectors in MMT CO2e, based upon IPCC Fourth Assessment Report Global Warming Potentials (ARB 2016b)
Population estimate derived from California Department of Finance Demographic Research Unit Report P-2 "State and County Population Projections by Race/Ethnicity and Age (5-year groups)" 2010 through 2060 (CDOF 2014).
Employment estimate from California Department of Finance Employment Development Department. Industry Employment Projections Labor Market Information Division 2010-2020 (Published 5/23/2012) and 2012-2022 (Published 9/19/2014).

METHODOLOGY

Short-term Construction Impacts

Short-term emissions were quantified using the California Emissions Estimator Model (CalEEMod), version 2016.3.2, based on anticipated building square footage provided for the proposed project. Other modeling assumptions, including construction equipment requirements, hours of use, worker and vendor vehicle trips, trips distances and fleet mix were based on model defaults for Monterey County. Refer to Appendix A for emissions modeling assumptions and results. Localized air quality impacts were qualitatively assessed.

Long-term Operational Air Quality Impacts

Long-term emissions were quantified using CalEEMod, version 2016.3.2, based on anticipated building square footage, parking, and student population. Vehicle trip-generation rates were derived from the traffic analysis prepared for this project (JLB 2019). Energy intensity factors were adjusted to reflect compliance with Renewable Portfolio Standards requirements. Other modeling assumptions, including vehicle trip distances and vehicle fleet mix were based on CalEEMod model defaults for Monterey County. Refer to Appendix A for emissions modeling assumptions and results. Localized air quality impacts were qualitatively assessed.

PROJECT IMPACTS

Impact GHG-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? and

Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

Short-term Construction GHG Emissions

Estimated GHG emissions associated with construction are summarized in Table 9. Based on the modeling conducted, annual emissions of greenhouse gases associated with construction of the proposed project would be approximately 69.1 $MTCO_2e$. Amortized GHG emissions, when averaged over an assumed 25-year life of the project, would total approximately 2.8 $MTCO_2e$/year. There would also be a small amount of GHG emissions from waste generated during construction; however, this amount is speculative. Actual emissions may vary, depending on the final construction schedules, equipment required, and activities conducted.

Table 9
Construction GHG Emissions

Project Phase	Annual Emissions ($MTCO_2e$/Year)
Buildout	69.1
Amortized Net Change in Construction Emissions[1]:	2.8
1. Amortized emissions are quantified based on an estimated 25-year project life. Refer to Appendix A for emissions modeling assumptions and results.	

Long-term Operational GHG Emissions

Operational GHG emissions associated with buildout of the proposed project for year 2020 are summarized in Table 10.

Table 10
Operational GHG Emissions by Source at Project Buildout

Source	Annual Emissions ($MTCO_2e$/year) [1]	Percent Contribution
Year 2020		
Area	< 0.1	<1%
Energy Use	18.6	18%
Mobile	77.9	74%
Waste	8.3	8%
Water	1.0	<1%
Total:	105.8	
Total with Amortized Construction Emissions [2]:	108.6	
Service Population (SP) [3]:	90	
$MTCO_2e$/SP:	1.2	
Exceeds Significance Thresholds?[4]:	No	

Notes:

1. *GHG emissions quantified for buildout conditions.*
2. *Refer to Table 9 for amortized construction emissions.*
3. *Service population is based on the student population at buildout.*
4. *Significance thresholds are based on annual mass-emissions threshold of 1,100 MTCO2e/year and an efficiency threshold of 4.9 MTCO2e/SP/year.*

Refer to Appendix A for emissions modeling assumptions and results.

As depicted in Table 10, operational emissions associated with the proposed development would generate approximately 105.8 MTCO$_2$*e*/year. With the inclusion of amortized construction-generated emissions, overall net increases of GHG emissions would be approximately 108.6 MTCO$_2$*e*/year under year 2020 operational conditions (refer to Table 10). Project-generated GHG emissions are projected to decrease in future years due largely to improvements in energy-efficiency and vehicle fleet emissions. At buildout, mobile sources are projected to account for roughly 74% of the total operational GHG emissions. Approximately 18% of the project's total operational GHGs would be associated with energy use. The remaining emissions would be associated with area sources, water use, and waste generation.

As noted in Table 10, annual GHG emissions would not exceed the mass-emission GHG significance threshold of 1,100 MTCO$_2$*e* or the GHG-efficiency significance threshold of 4.9 MTCO$_2$*e*/year. As a result, the proposed project would not result in GHG emissions that would have a significant impact on the environment, nor would the proposed project conflict with applicable GHG-reduction plans, policies or regulations. This impact would be considered *less than significant*. No mitigation is required.

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APPENDIX A

Emissions Modeling

Buckhorn Early Learning Center

Monterey County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Day-Care Center	90.00	Student	0.60	8,200.00	105
Parking Lot	22.00	Space	0.20	8,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.6	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	488.3	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intensity factors based on an operational year of 2020 for renewable porfolio standards.

Land Use - Day-Care Center is estimated to serve 90 preschool-aged children and 15 faculty members.

Vehicle Trips - Trip rate based on proposed project trip generation of 1.89 trips per student per day, provided by JLB Traffic Engineering, Inc.

Energy Use -

Construction Off-road Equipment Mitigation - Includes use of tier 3 offroad equipment, 50% CE for unpaved roads, 61% CE for graded surfaces, and 15 mph onsite speed limit.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	LandUseSquareFeet	5,087.06	8,200.00
tblLandUse	LotAcreage	0.12	0.60
tblLandUse	Population	0.00	105.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	641.35	488.3
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	WD_TR	4.38	1.89

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					
2019	0.1189	0.5938	0.4726	7.6000e-004	5.6600e-003	0.0353	0.0410	1.7000e-003	0.0326	0.0343	0.0000	68.5979	68.5979	0.0186	0.0000	69.0639
Maximum	**0.1189**	**0.5938**	**0.4726**	**7.6000e-004**	**5.6600e-003**	**0.0353**	**0.0410**	**1.7000e-003**	**0.0326**	**0.0343**	**0.0000**	**68.5979**	**68.5979**	**0.0186**	**0.0000**	**69.0639**

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					
2019	0.0786	0.3825	0.4953	7.6000e-004	5.0400e-003	0.0230	0.0280	1.4300e-003	0.0230	0.0244	0.0000	68.5978	68.5978	0.0186	0.0000	69.0638
Maximum	**0.0786**	**0.3825**	**0.4953**	**7.6000e-004**	**5.0400e-003**	**0.0230**	**0.0280**	**1.4300e-003**	**0.0230**	**0.0244**	**0.0000**	**68.5978**	**68.5978**	**0.0186**	**0.0000**	**69.0638**

	ROG	NOx	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	**33.91**	**35.59**	**-4.79**	**0.00**	**10.95**	**34.94**	**31.64**	**15.88**	**29.64**	**28.96**	**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	**5-1-2019**	**7-31-2019**	0.3601	0.2225
2	**8-1-2019**	**9-30-2019**	0.2453	0.1501
		Highest	0.3601	0.2225

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	0.0386	1.0000e-005	1.4400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7800e-003	2.7800e-003	1.0000e-005	0.0000	2.9700e-003
Energy	8.2000e-004	7.4100e-003	6.2300e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	18.5406	18.5406	6.3000e-004	2.6000e-004	18.6323
Mobile	0.0457	0.1680	0.4126	8.5000e-004	0.0580	1.0300e-003	0.0590	0.0156	9.6000e-004	0.0165	0.0000	77.8201	77.8201	5.1000e-003	0.0000	77.9475
Waste						0.0000	0.0000		0.0000	0.0000	3.3351	0.0000	3.3351	0.1971	0.0000	8.2627
Water						0.0000	0.0000		0.0000	0.0000	0.0692	0.6964	0.7656	7.1400e-003	1.8000e-004	0.9963
Total	**0.0851**	**0.1754**	**0.4203**	**8.9000e-004**	**0.0580**	**1.6000e-003**	**0.0596**	**0.0156**	**1.5300e-003**	**0.0171**	**3.4044**	**97.0599**	**100.4642**	**0.2100**	**4.4000e-004**	**105.8417**

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	0.0386	1.0000e-005	1.4400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7800e-003	2.7800e-003	1.0000e-005	0.0000	2.9700e-003
Energy	8.2000e-004	7.4100e-003	6.2300e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	18.5406	18.5406	6.3000e-004	2.6000e-004	18.6323
Mobile	0.0457	0.1680	0.4126	8.5000e-004	0.0580	1.0300e-003	0.0590	0.0156	9.6000e-004	0.0165	0.0000	77.8201	77.8201	5.1000e-003	0.0000	77.9475
Waste						0.0000	0.0000		0.0000	0.0000	3.3351	0.0000	3.3351	0.1971	0.0000	8.2627
Water						0.0000	0.0000		0.0000	0.0000	0.0692	0.6964	0.7656	7.1400e-003	1.8000e-004	0.9963
Total	**0.0851**	**0.1754**	**0.4203**	**8.9000e-004**	**0.0580**	**1.6000e-003**	**0.0596**	**0.0156**	**1.5300e-003**	**0.0171**	**3.4044**	**97.0599**	**100.4642**	**0.2100**	**4.4000e-004**	**105.8417**

	ROG	**NOx**	**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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	5/1/2019	5/14/2019	5	10	
2	Site Preparation	Site Preparation	5/15/2019	5/15/2019	5	1	
3	Grading	Grading	5/16/2019	5/17/2019	5	2	
4	Building Construction	Building Construction	5/18/2019	10/4/2019	5	100	
5	Paving	Paving	10/5/2019	10/11/2019	5	5	
6	Architectural Coating	Architectural Coating	10/12/2019	10/18/2019	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.2

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 12,300; Non-Residential Outdoor: 4,100; Striped Parking Area: 528 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	3.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

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	4.7700e-003	0.0430	0.0385	6.0000e-005		2.6900e-003	2.6900e-003		2.5600e-003	2.5600e-003	0.0000	5.2601	5.2601	1.0000e-003	0.0000	5.2852
Total	**4.7700e-003**	**0.0430**	**0.0385**	**6.0000e-005**		**2.6900e-003**	**2.6900e-003**		**2.5600e-003**	**2.5600e-003**	**0.0000**	**5.2601**	**5.2601**	**1.0000e-003**	**0.0000**	**5.2852**

3.2 Demolition - 2019

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	2.4000e-004	2.3000e-004	2.0500e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3897	0.3897	2.0000e-005	0.0000	0.3901
Total	**2.4000e-004**	**2.3000e-004**	**2.0500e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3897**	**0.3897**	**2.0000e-005**	**0.0000**	**0.3901**

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	1.3300e-003	0.0298	0.0397	6.0000e-005		2.0100e-003	2.0100e-003		2.0100e-003	2.0100e-003	0.0000	5.2601	5.2601	1.0000e-003	0.0000	5.2852
Total	**1.3300e-003**	**0.0298**	**0.0397**	**6.0000e-005**		**2.0100e-003**	**2.0100e-003**		**2.0100e-003**	**2.0100e-003**	**0.0000**	**5.2601**	**5.2601**	**1.0000e-003**	**0.0000**	**5.2852**

3.2 Demolition - 2019

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	2.4000e-004	2.3000e-004	2.0500e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3897	0.3897	2.0000e-005	0.0000	0.3901
Total	**2.4000e-004**	**2.3000e-004**	**2.0500e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3897**	**0.3897**	**2.0000e-005**	**0.0000**	**0.3901**

3.3 Site Preparation - 2019

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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-004	4.4600e-003	2.0700e-003	0.0000		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.4378	0.4378	1.4000e-004	0.0000	0.4413
Total	**3.6000e-004**	**4.4600e-003**	**2.0700e-003**	**0.0000**	**2.7000e-004**	**1.8000e-004**	**4.5000e-004**	**3.0000e-005**	**1.7000e-004**	**2.0000e-004**	**0.0000**	**0.4378**	**0.4378**	**1.4000e-004**	**0.0000**	**0.4413**

3.3 Site Preparation - 2019

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	1.0000e-005	1.0000e-005	1.0000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0195	0.0195	0.0000	0.0000	0.0195
Total	**1.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0195**	**0.0195**	**0.0000**	**0.0000**	**0.0195**

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					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2000e-004	2.4400e-003	2.9300e-003	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.4378	0.4378	1.4000e-004	0.0000	0.4413
Total	**1.2000e-004**	**2.4400e-003**	**2.9300e-003**	**0.0000**	**1.0000e-004**	**1.2000e-004**	**2.2000e-004**	**1.0000e-005**	**1.2000e-004**	**1.3000e-004**	**0.0000**	**0.4378**	**0.4378**	**1.4000e-004**	**0.0000**	**0.4413**

3.3 Site Preparation - 2019

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	1.0000e-005	1.0000e-005	1.0000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0195	0.0195	0.0000	0.0000	0.0195
Total	**1.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0195**	**0.0195**	**0.0000**	**0.0000**	**0.0195**

3.4 Grading - 2019

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					7.5000e-004	0.0000	7.5000e-004	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5000e-004	8.6000e-003	7.6900e-003	1.0000e-005		5.4000e-004	5.4000e-004		5.1000e-004	5.1000e-004	0.0000	1.0520	1.0520	2.0000e-004	0.0000	1.0570
Total	**9.5000e-004**	**8.6000e-003**	**7.6900e-003**	**1.0000e-005**	**7.5000e-004**	**5.4000e-004**	**1.2900e-003**	**4.1000e-004**	**5.1000e-004**	**9.2000e-004**	**0.0000**	**1.0520**	**1.0520**	**2.0000e-004**	**0.0000**	**1.0570**

3.4 Grading - 2019

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	5.0000e-005	5.0000e-005	4.1000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0779	0.0779	0.0000	0.0000	0.0780
Total	**5.0000e-005**	**5.0000e-005**	**4.1000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0779**	**0.0779**	**0.0000**	**0.0000**	**0.0780**

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					2.9000e-004	0.0000	2.9000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7000e-004	5.9600e-003	7.9400e-003	1.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	1.0520	1.0520	2.0000e-004	0.0000	1.0570
Total	**2.7000e-004**	**5.9600e-003**	**7.9400e-003**	**1.0000e-005**	**2.9000e-004**	**4.0000e-004**	**6.9000e-004**	**1.6000e-004**	**4.0000e-004**	**5.6000e-004**	**0.0000**	**1.0520**	**1.0520**	**2.0000e-004**	**0.0000**	**1.0570**

3.4 Grading - 2019

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	5.0000e-005	5.0000e-005	4.1000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0779	0.0779	0.0000	0.0000	0.0780
Total	**5.0000e-005**	**5.0000e-005**	**4.1000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0779**	**0.0779**	**0.0000**	**0.0000**	**0.0780**

3.5 Building Construction - 2019

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	0.0479	0.4910	0.3772	5.7000e-004		0.0303	0.0303		0.0279	0.0279	0.0000	51.1502	51.1502	0.0162	0.0000	51.5548
Total	**0.0479**	**0.4910**	**0.3772**	**5.7000e-004**		**0.0303**	**0.0303**		**0.0279**	**0.0279**	**0.0000**	**51.1502**	**51.1502**	**0.0162**	**0.0000**	**51.5548**

3.5 Building Construction - 2019

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	8.3000e-004	0.0204	5.8500e-003	4.0000e-005	9.9000e-004	1.6000e-004	1.1500e-003	2.9000e-004	1.5000e-004	4.4000e-004	0.0000	4.0813	4.0813	2.0000e-004	0.0000	4.0864
Worker	1.6900e-003	1.6100e-003	0.0144	3.0000e-005	2.7800e-003	3.0000e-005	2.8100e-003	7.4000e-004	2.0000e-005	7.6000e-004	0.0000	2.7277	2.7277	1.3000e-004	0.0000	2.7310
Total	**2.5200e-003**	**0.0220**	**0.0202**	**7.0000e-005**	**3.7700e-003**	**1.9000e-004**	**3.9600e-003**	**1.0300e-003**	**1.7000e-004**	**1.2000e-003**	**0.0000**	**6.8090**	**6.8090**	**3.3000e-004**	**0.0000**	**6.8174**

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	0.0140	0.3065	0.3981	5.7000e-004		0.0193	0.0193		0.0193	0.0193	0.0000	51.1502	51.1502	0.0162	0.0000	51.5548
Total	**0.0140**	**0.3065**	**0.3981**	**5.7000e-004**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**51.1502**	**51.1502**	**0.0162**	**0.0000**	**51.5548**

3.5 Building Construction - 2019

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	8.3000e-004	0.0204	5.8500e-003	4.0000e-005	9.9000e-004	1.6000e-004	1.1500e-003	2.9000e-004	1.5000e-004	4.4000e-004	0.0000	4.0813	4.0813	2.0000e-004	0.0000	4.0864
Worker	1.6900e-003	1.6100e-003	0.0144	3.0000e-005	2.7800e-003	3.0000e-005	2.8100e-003	7.4000e-004	2.0000e-005	7.6000e-004	0.0000	2.7277	2.7277	1.3000e-004	0.0000	2.7310
Total	**2.5200e-003**	**0.0220**	**0.0202**	**7.0000e-005**	**3.7700e-003**	**1.9000e-004**	**3.9600e-003**	**1.0300e-003**	**1.7000e-004**	**1.2000e-003**	**0.0000**	**6.8090**	**6.8090**	**3.3000e-004**	**0.0000**	**6.8174**

3.6 Paving - 2019

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	2.0700e-003	0.0196	0.0179	3.0000e-005		1.1100e-003	1.1100e-003		1.0300e-003	1.0300e-003	0.0000	2.3931	2.3931	6.8000e-004	0.0000	2.4102
Paving	2.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.3300e-003**	**0.0196**	**0.0179**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.0300e-003**	**1.0300e-003**	**0.0000**	**2.3931**	**2.3931**	**6.8000e-004**	**0.0000**	**2.4102**

3.6 Paving - 2019

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	2.2000e-004	2.1000e-004	1.8500e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3507	0.3507	2.0000e-005	0.0000	0.3511
Total	**2.2000e-004**	**2.1000e-004**	**1.8500e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3507**	**0.3507**	**2.0000e-005**	**0.0000**	**0.3511**

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	5.6000e-004	0.0119	0.0173	3.0000e-005		7.3000e-004	7.3000e-004		7.3000e-004	7.3000e-004	0.0000	2.3931	2.3931	6.8000e-004	0.0000	2.4102
Paving	2.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.2000e-004**	**0.0119**	**0.0173**	**3.0000e-005**		**7.3000e-004**	**7.3000e-004**		**7.3000e-004**	**7.3000e-004**	**0.0000**	**2.3931**	**2.3931**	**6.8000e-004**	**0.0000**	**2.4102**

3.6 Paving - 2019

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	2.2000e-004	2.1000e-004	1.8500e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3507	0.3507	2.0000e-005	0.0000	0.3511
Total	**2.2000e-004**	**2.1000e-004**	**1.8500e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3507**	**0.3507**	**2.0000e-005**	**0.0000**	**0.3511**

3.7 Architectural Coating - 2019

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	0.0589					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397
Total	**0.0595**	**4.5900e-003**	**4.6000e-003**	**1.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**0.6383**	**0.6383**	**5.0000e-005**	**0.0000**	**0.6397**

3.7 Architectural Coating - 2019

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	1.0000e-005	1.0000e-005	1.0000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0195	0.0195	0.0000	0.0000	0.0195
Total	**1.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0195**	**0.0195**	**0.0000**	**0.0000**	**0.0195**

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	0.0589					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-004	3.3900e-003	4.5800e-003	1.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397
Total	**0.0590**	**3.3900e-003**	**4.5800e-003**	**1.0000e-005**		**2.4000e-004**	**2.4000e-004**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**0.6383**	**0.6383**	**5.0000e-005**	**0.0000**	**0.6397**

3.7 Architectural Coating - 2019

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	1.0000e-005	1.0000e-005	1.0000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0195	0.0195	0.0000	0.0000	0.0195
Total	**1.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0195**	**0.0195**	**0.0000**	**0.0000**	**0.0195**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive 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	0.0457	0.1680	0.4126	8.5000e-004	0.0580	1.0300e-003	0.0590	0.0156	9.6000e-004	0.0165	0.0000	77.8201	77.8201	5.1000e-003	0.0000	77.9475
Unmitigated	0.0457	0.1680	0.4126	8.5000e-004	0.0580	1.0300e-003	0.0590	0.0156	9.6000e-004	0.0165	0.0000	77.8201	77.8201	5.1000e-003	0.0000	77.9475

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Day-Care Center	170.10	35.10	33.30	154,589	154,589
Parking Lot	0.00	0.00	0.00		
Total	170.10	35.10	33.30	154,589	154,589

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
Day-Care Center	9.50	7.30	7.30	12.70	82.30	5.00	28	58	14
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Day-Care Center	0.533135	0.030877	0.202665	0.141212	0.024955	0.006027	0.018072	0.025901	0.004150	0.002959	0.007890	0.001253	0.000905
Parking Lot	0.533135	0.030877	0.202665	0.141212	0.024955	0.006027	0.018072	0.025901	0.004150	0.002959	0.007890	0.001253	0.000905

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive 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	10.4716	10.4716	4.7000e-004	1.1000e-004	10.5153
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	10.4716	10.4716	4.7000e-004	1.1000e-004	10.5153
NaturalGas Mitigated	8.2000e-004	7.4100e-003	6.2300e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	8.0690	8.0690	1.5000e-004	1.5000e-004	8.1170
NaturalGas Unmitigated	8.2000e-004	7.4100e-003	6.2300e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	8.0690	8.0690	1.5000e-004	1.5000e-004	8.1170

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					
Day-Care Center	151208	8.2000e-004	7.4100e-003	6.2300e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	8.0690	8.0690	1.5000e-004	1.5000e-004	8.1170
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
Total		**8.2000e-004**	**7.4100e-003**	**6.2300e-003**	**4.0000e-005**		**5.6000e-004**	**5.6000e-004**		**5.6000e-004**	**5.6000e-004**	**0.0000**	**8.0690**	**8.0690**	**1.5000e-004**	**1.5000e-004**	**8.1170**

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					
Day-Care Center	151208	8.2000e-004	7.4100e-003	6.2300e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	8.0690	8.0690	1.5000e-004	1.5000e-004	8.1170
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
Total		**8.2000e-004**	**7.4100e-003**	**6.2300e-003**	**4.0000e-005**		**5.6000e-004**	**5.6000e-004**		**5.6000e-004**	**5.6000e-004**	**0.0000**	**8.0690**	**8.0690**	**1.5000e-004**	**1.5000e-004**	**8.1170**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Day-Care Center	44198	9.7894	4.4000e-004	1.0000e-004	9.8303
Parking Lot	3080	0.6822	3.0000e-005	1.0000e-005	0.6850
Total		**10.4716**	**4.7000e-004**	**1.1000e-004**	**10.5153**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Day-Care Center	44198	9.7894	4.4000e-004	1.0000e-004	9.8303
Parking Lot	3080	0.6822	3.0000e-005	1.0000e-005	0.6850
Total		**10.4716**	**4.7000e-004**	**1.1000e-004**	**10.5153**

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	0.0386	1.0000e-005	1.4400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7800e-003	2.7800e-003	1.0000e-005	0.0000	2.9700e-003
Unmitigated	0.0386	1.0000e-005	1.4400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7800e-003	2.7800e-003	1.0000e-005	0.0000	2.9700e-003

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	5.8800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0326					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.4400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7800e-003	2.7800e-003	1.0000e-005	0.0000	2.9700e-003
Total	**0.0386**	**1.0000e-005**	**1.4400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.7800e-003**	**2.7800e-003**	**1.0000e-005**	**0.0000**	**2.9700e-003**

6.2 Area by SubCategory

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	5.8800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0326					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.4400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7800e-003	2.7800e-003	1.0000e-005	0.0000	2.9700e-003
Total	**0.0386**	**1.0000e-005**	**1.4400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.7800e-003**	**2.7800e-003**	**1.0000e-005**	**0.0000**	**2.9700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.7656	7.1400e-003	1.8000e-004	0.9963
Unmitigated	0.7656	7.1400e-003	1.8000e-004	0.9963

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Day-Care Center	0.218182 / 0.561038	0.7656	7.1400e-003	1.8000e-004	0.9963
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.7656**	**7.1400e-003**	**1.8000e-004**	**0.9963**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Day-Care Center	0.218182 / 0.561038	0.7656	7.1400e-003	1.8000e-004	0.9963
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.7656**	**7.1400e-003**	**1.8000e-004**	**0.9963**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.3351	0.1971	0.0000	8.2627
Unmitigated	3.3351	0.1971	0.0000	8.2627

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Day-Care Center	16.43	3.3351	0.1971	0.0000	8.2627
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**3.3351**	**0.1971**	**0.0000**	**8.2627**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Day-Care Center	16.43	3.3351	0.1971	0.0000	8.2627
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**3.3351**	**0.1971**	**0.0000**	**8.2627**

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

Buckhorn Early Learning Center

Monterey County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Day-Care Center	90.00	Student	0.60	8,200.00	105
Parking Lot	22.00	Space	0.20	8,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.6	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	488.3	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intensity factors based on an operational year of 2020 for renewable porfolio standards.

Land Use - Day-Care Center is estimated to serve 90 preschool-aged children and 15 faculty members.

Vehicle Trips - Trip rate based on proposed project trip generation of 1.89 trips per student per day, provided by JLB Traffic Engineering, Inc.

Energy Use -

Construction Off-road Equipment Mitigation - Includes use of tier 3 offroad equipment, 50% CE for unpaved roads, 61% CE for graded surfaces, and 15 mph onsite speed limit.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	LandUseSquareFeet	5,087.06	8,200.00
tblLandUse	LotAcreage	0.12	0.60
tblLandUse	Population	0.00	105.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	641.35	488.3
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	WD_TR	4.38	1.89

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					
2019	23.8101	10.2627	8.1192	0.0128	0.8349	0.6091	1.3727	0.4356	0.5605	0.9487	0.0000	1,275.9471	1,275.9471	0.3644	0.0000	1,285.0570
Maximum	**23.8101**	**10.2627**	**8.1192**	**0.0128**	**0.8349**	**0.6091**	**1.3727**	**0.4356**	**0.5605**	**0.9487**	**0.0000**	**1,275.9471**	**1,275.9471**	**0.3644**	**0.0000**	**1,285.0570**

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					
2019	23.6031	6.5717	8.3870	0.0128	0.3757	0.4024	0.7782	0.1832	0.4024	0.5855	0.0000	1,275.9471	1,275.9471	0.3644	0.0000	1,285.0570
Maximum	**23.6031**	**6.5717**	**8.3870**	**0.0128**	**0.3757**	**0.4024**	**0.7782**	**0.1832**	**0.4024**	**0.5855**	**0.0000**	**1,275.9471**	**1,275.9471**	**0.3644**	**0.0000**	**1,285.0570**

	ROG	NOx	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	0.87	35.97	-3.30	0.00	55.00	33.93	43.31	57.95	28.21	38.28	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	0.2119	1.1000e-004	0.0115	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0245	0.0245	7.0000e-005		0.0262
Energy	4.4700e-003	0.0406	0.0341	2.4000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003		48.7375	48.7375	9.3000e-004	8.9000e-004	49.0271
Mobile	0.3264	1.2195	3.1928	6.0000e-003	0.4265	7.4000e-003	0.4339	0.1143	6.9500e-003	0.1212		604.5681	604.5681	0.0416		605.6081
Total	**0.5428**	**1.2602**	**3.2384**	**6.2400e-003**	**0.4265**	**0.0105**	**0.4371**	**0.1143**	**0.0101**	**0.1244**		**653.3301**	**653.3301**	**0.0426**	**8.9000e-004**	**654.6613**

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	0.2119	1.1000e-004	0.0115	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0245	0.0245	7.0000e-005		0.0262
Energy	4.4700e-003	0.0406	0.0341	2.4000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003		48.7375	48.7375	9.3000e-004	8.9000e-004	49.0271
Mobile	0.3264	1.2195	3.1928	6.0000e-003	0.4265	7.4000e-003	0.4339	0.1143	6.9500e-003	0.1212		604.5681	604.5681	0.0416		605.6081
Total	**0.5428**	**1.2602**	**3.2384**	**6.2400e-003**	**0.4265**	**0.0105**	**0.4371**	**0.1143**	**0.0101**	**0.1244**		**653.3301**	**653.3301**	**0.0426**	**8.9000e-004**	**654.6613**

	ROG	NOx	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	5/1/2019	5/14/2019	5	10	
2	Site Preparation	Site Preparation	5/15/2019	5/15/2019	5	1	
3	Grading	Grading	5/16/2019	5/17/2019	5	2	
4	Building Construction	Building Construction	5/18/2019	10/4/2019	5	100	
5	Paving	Paving	10/5/2019	10/11/2019	5	5	
6	Architectural Coating	Architectural Coating	10/12/2019	10/18/2019	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.2

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 12,300; Non-Residential Outdoor: 4,100; Striped Parking Area: 528 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	3.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

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	0.9530	8.6039	7.6917	0.0120		0.5371	0.5371		0.5125	0.5125		1,159.6570	1,159.6570	0.2211		1,165.1847
Total	**0.9530**	**8.6039**	**7.6917**	**0.0120**		**0.5371**	**0.5371**		**0.5125**	**0.5125**		**1,159.6570**	**1,159.6570**	**0.2211**		**1,165.1847**

3.2 Demolition - 2019

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	0.0531	0.0507	0.4275	8.6000e-004	0.0822	7.4000e-004	0.0829	0.0218	6.8000e-004	0.0225		85.4095	85.4095	4.1700e-003		85.5138
Total	**0.0531**	**0.0507**	**0.4275**	**8.6000e-004**	**0.0822**	**7.4000e-004**	**0.0829**	**0.0218**	**6.8000e-004**	**0.0225**		**85.4095**	**85.4095**	**4.1700e-003**		**85.5138**

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	0.2652	5.9644	7.9381	0.0120		0.4017	0.4017		0.4017	0.4017	0.0000	1,159.6570	1,159.6570	0.2211		1,165.1847
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**		**0.4017**	**0.4017**		**0.4017**	**0.4017**	**0.0000**	**1,159.6570**	**1,159.6570**	**0.2211**		**1,165.1847**

3.2 Demolition - 2019

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	0.0531	0.0507	0.4275	8.6000e-004	0.0822	7.4000e-004	0.0829	0.0218	6.8000e-004	0.0225		85.4095	85.4095	4.1700e-003		85.5138
Total	**0.0531**	**0.0507**	**0.4275**	**8.6000e-004**	**0.0822**	**7.4000e-004**	**0.0829**	**0.0218**	**6.8000e-004**	**0.0225**		**85.4095**	**85.4095**	**4.1700e-003**		**85.5138**

3.3 Site Preparation - 2019

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.7195	8.9170	4.1407	9.7500e-003		0.3672	0.3672		0.3378	0.3378		965.1690	965.1690	0.3054		972.8032
Total	**0.7195**	**8.9170**	**4.1407**	**9.7500e-003**	**0.5303**	**0.3672**	**0.8975**	**0.0573**	**0.3378**	**0.3951**		**965.1690**	**965.1690**	**0.3054**		**972.8032**

3.3 Site Preparation - 2019

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	0.0266	0.0253	0.2137	4.3000e-004	0.0411	3.7000e-004	0.0414	0.0109	3.4000e-004	0.0112		42.7048	42.7048	2.0900e-003		42.7569
Total	**0.0266**	**0.0253**	**0.2137**	**4.3000e-004**	**0.0411**	**3.7000e-004**	**0.0414**	**0.0109**	**3.4000e-004**	**0.0112**		**42.7048**	**42.7048**	**2.0900e-003**		**42.7569**

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					0.2068	0.0000	0.2068	0.0223	0.0000	0.0223			0.0000			0.0000
Off-Road	0.2382	4.8716	5.8579	9.7500e-003		0.2405	0.2405		0.2405	0.2405	0.0000	965.1690	965.1690	0.3054		972.8032
Total	**0.2382**	**4.8716**	**5.8579**	**9.7500e-003**	**0.2068**	**0.2405**	**0.4473**	**0.0223**	**0.2405**	**0.2629**	**0.0000**	**965.1690**	**965.1690**	**0.3054**		**972.8032**

3.3 Site Preparation - 2019

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	0.0266	0.0253	0.2137	4.3000e-004	0.0411	3.7000e-004	0.0414	0.0109	3.4000e-004	0.0112		42.7048	42.7048	2.0900e-003		42.7569
Total	**0.0266**	**0.0253**	**0.2137**	**4.3000e-004**	**0.0411**	**3.7000e-004**	**0.0414**	**0.0109**	**3.4000e-004**	**0.0112**		**42.7048**	**42.7048**	**2.0900e-003**		**42.7569**

3.4 Grading - 2019

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					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	0.9530	8.6039	7.6917	0.0120		0.5371	0.5371		0.5125	0.5125		1,159.6570	1,159.6570	0.2211		1,165.1847
Total	**0.9530**	**8.6039**	**7.6917**	**0.0120**	**0.7528**	**0.5371**	**1.2898**	**0.4138**	**0.5125**	**0.9263**		**1,159.6570**	**1,159.6570**	**0.2211**		**1,165.1847**

3.4 Grading - 2019

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	0.0531	0.0507	0.4275	8.6000e-004	0.0822	7.4000e-004	0.0829	0.0218	6.8000e-004	0.0225		85.4095	85.4095	4.1700e-003		85.5138
Total	**0.0531**	**0.0507**	**0.4275**	**8.6000e-004**	**0.0822**	**7.4000e-004**	**0.0829**	**0.0218**	**6.8000e-004**	**0.0225**		**85.4095**	**85.4095**	**4.1700e-003**		**85.5138**

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					0.2936	0.0000	0.2936	0.1614	0.0000	0.1614			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.4017	0.4017		0.4017	0.4017	0.0000	1,159.6570	1,159.6570	0.2211		1,165.1847
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**0.2936**	**0.4017**	**0.6953**	**0.1614**	**0.4017**	**0.5631**	**0.0000**	**1,159.6570**	**1,159.6570**	**0.2211**		**1,165.1847**

3.4 Grading - 2019

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	0.0531	0.0507	0.4275	8.6000e-004	0.0822	7.4000e-004	0.0829	0.0218	6.8000e-004	0.0225		85.4095	85.4095	4.1700e-003		85.5138
Total	**0.0531**	**0.0507**	**0.4275**	**8.6000e-004**	**0.0822**	**7.4000e-004**	**0.0829**	**0.0218**	**6.8000e-004**	**0.0225**		**85.4095**	**85.4095**	**4.1700e-003**		**85.5138**

3.5 Building Construction - 2019

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	0.9576	9.8207	7.5432	0.0114		0.6054	0.6054		0.5569	0.5569		1,127.669 6	1,127.669 6	0.3568		1,136.589 2
Total	**0.9576**	**9.8207**	**7.5432**	**0.0114**		**0.6054**	**0.6054**		**0.5569**	**0.5569**		**1,127.669 6**	**1,127.669 6**	**0.3568**		**1,136.589 2**

3.5 Building Construction - 2019

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	0.0171	0.4066	0.1254	8.4000e-004	0.0203	3.2000e-003	0.0235	5.8400e-003	3.0600e-003	8.9000e-003		88.4908	88.4908	4.6900e-003		88.6081
Worker	0.0372	0.0355	0.2992	6.0000e-004	0.0575	5.2000e-004	0.0580	0.0153	4.8000e-004	0.0157		59.7867	59.7867	2.9200e-003		59.8597
Total	**0.0543**	**0.4420**	**0.4246**	**1.4400e-003**	**0.0778**	**3.7200e-003**	**0.0815**	**0.0211**	**3.5400e-003**	**0.0246**		**148.2774**	**148.2774**	**7.6100e-003**		**148.4678**

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	0.2793	6.1296	7.9624	0.0114		0.3855	0.3855		0.3855	0.3855	0.0000	1,127.6696	1,127.6696	0.3568		1,136.5892
Total	**0.2793**	**6.1296**	**7.9624**	**0.0114**		**0.3855**	**0.3855**		**0.3855**	**0.3855**	**0.0000**	**1,127.6696**	**1,127.6696**	**0.3568**		**1,136.5892**

3.5 Building Construction - 2019

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	0.0171	0.4066	0.1254	8.4000e-004	0.0203	3.2000e-003	0.0235	5.8400e-003	3.0600e-003	8.9000e-003		88.4908	88.4908	4.6900e-003		88.6081
Worker	0.0372	0.0355	0.2992	6.0000e-004	0.0575	5.2000e-004	0.0580	0.0153	4.8000e-004	0.0157		59.7867	59.7867	2.9200e-003		59.8597
Total	**0.0543**	**0.4420**	**0.4246**	**1.4400e-003**	**0.0778**	**3.7200e-003**	**0.0815**	**0.0211**	**3.5400e-003**	**0.0246**		**148.2774**	**148.2774**	**7.6100e-003**		**148.4678**

3.6 Paving - 2019

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	0.8300	7.8446	7.1478	0.0113		0.4425	0.4425		0.4106	0.4106		1,055.1823	1,055.1823	0.3016		1,062.7231
Paving	0.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9348**	**7.8446**	**7.1478**	**0.0113**		**0.4425**	**0.4425**		**0.4106**	**0.4106**		**1,055.1823**	**1,055.1823**	**0.3016**		**1,062.7231**

3.6 Paving - 2019

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	0.0957	0.0912	0.7694	1.5500e-003	0.1479	1.3300e-003	0.1492	0.0392	1.2300e-003	0.0405		153.7371	153.7371	7.5100e-003		153.9249
Total	**0.0957**	**0.0912**	**0.7694**	**1.5500e-003**	**0.1479**	**1.3300e-003**	**0.1492**	**0.0392**	**1.2300e-003**	**0.0405**		**153.7371**	**153.7371**	**7.5100e-003**		**153.9249**

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	0.2239	4.7579	6.9028	0.0113		0.2908	0.2908		0.2908	0.2908	0.0000	1,055.1823	1,055.1823	0.3016		1,062.7231
Paving	0.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3287**	**4.7579**	**6.9028**	**0.0113**		**0.2908**	**0.2908**		**0.2908**	**0.2908**	**0.0000**	**1,055.1823**	**1,055.1823**	**0.3016**		**1,062.7231**

3.6 Paving - 2019

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	0.0957	0.0912	0.7694	1.5500e-003	0.1479	1.3300e-003	0.1492	0.0392	1.2300e-003	0.0405		153.7371	153.7371	7.5100e-003		153.9249
Total	**0.0957**	**0.0912**	**0.7694**	**1.5500e-003**	**0.1479**	**1.3300e-003**	**0.1492**	**0.0392**	**1.2300e-003**	**0.0405**		**153.7371**	**153.7371**	**7.5100e-003**		**153.9249**

3.7 Architectural Coating - 2019

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	23.5384					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**23.8048**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.7 Architectural Coating - 2019

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	5.3100e-003	5.0700e-003	0.0428	9.0000e-005	8.2100e-003	7.0000e-005	8.2900e-003	2.1800e-003	7.0000e-005	2.2500e-003		8.5410	8.5410	4.2000e-004		8.5514
Total	**5.3100e-003**	**5.0700e-003**	**0.0428**	**9.0000e-005**	**8.2100e-003**	**7.0000e-005**	**8.2900e-003**	**2.1800e-003**	**7.0000e-005**	**2.2500e-003**		**8.5410**	**8.5410**	**4.2000e-004**		**8.5514**

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	23.5384					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**23.5978**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0951**	**0.0951**		**0.0951**	**0.0951**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.7 Architectural Coating - 2019

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	5.3100e-003	5.0700e-003	0.0428	9.0000e-005	8.2100e-003	7.0000e-005	8.2900e-003	2.1800e-003	7.0000e-005	2.2500e-003		8.5410	8.5410	4.2000e-004		8.5514
Total	**5.3100e-003**	**5.0700e-003**	**0.0428**	**9.0000e-005**	**8.2100e-003**	**7.0000e-005**	**8.2900e-003**	**2.1800e-003**	**7.0000e-005**	**2.2500e-003**		**8.5410**	**8.5410**	**4.2000e-004**		**8.5514**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive 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	0.3264	1.2195	3.1928	6.0000e-003	0.4265	7.4000e-003	0.4339	0.1143	6.9500e-003	0.1212		604.5681	604.5681	0.0416		605.6081
Unmitigated	0.3264	1.2195	3.1928	6.0000e-003	0.4265	7.4000e-003	0.4339	0.1143	6.9500e-003	0.1212		604.5681	604.5681	0.0416		605.6081

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Day-Care Center	170.10	35.10	33.30	154,589	154,589
Parking Lot	0.00	0.00	0.00		
Total	170.10	35.10	33.30	154,589	154,589

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
Day-Care Center	9.50	7.30	7.30	12.70	82.30	5.00	28	58	14
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Day-Care Center	0.533135	0.030877	0.202665	0.141212	0.024955	0.006027	0.018072	0.025901	0.004150	0.002959	0.007890	0.001253	0.000905
Parking Lot	0.533135	0.030877	0.202665	0.141212	0.024955	0.006027	0.018072	0.025901	0.004150	0.002959	0.007890	0.001253	0.000905

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive 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	4.4700e-003	0.0406	0.0341	2.4000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003		48.7375	48.7375	9.3000e-004	8.9000e-004	49.0271
NaturalGas Unmitigated	4.4700e-003	0.0406	0.0341	2.4000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003		48.7375	48.7375	9.3000e-004	8.9000e-004	49.0271

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					
Day-Care Center	414.268	4.4700e-003	0.0406	0.0341	2.4000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003		48.7375	48.7375	9.3000e-004	8.9000e-004	49.0271
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
Total		**4.4700e-003**	**0.0406**	**0.0341**	**2.4000e-004**		**3.0900e-003**	**3.0900e-003**		**3.0900e-003**	**3.0900e-003**		**48.7375**	**48.7375**	**9.3000e-004**	**8.9000e-004**	**49.0271**

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					
Day-Care Center	0.414268	4.4700e-003	0.0406	0.0341	2.4000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003		48.7375	48.7375	9.3000e-004	8.9000e-004	49.0271
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
Total		**4.4700e-003**	**0.0406**	**0.0341**	**2.4000e-004**		**3.0900e-003**	**3.0900e-003**		**3.0900e-003**	**3.0900e-003**		**48.7375**	**48.7375**	**9.3000e-004**	**8.9000e-004**	**49.0271**

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	0.2119	1.1000e-004	0.0115	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0245	0.0245	7.0000e-005		0.0262
Unmitigated	0.2119	1.1000e-004	0.0115	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0245	0.0245	7.0000e-005		0.0262

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	0.0322					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0800e-003	1.1000e-004	0.0115	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0245	0.0245	7.0000e-005		0.0262
Total	**0.2119**	**1.1000e-004**	**0.0115**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0245**	**0.0245**	**7.0000e-005**		**0.0262**

6.2 Area by SubCategory

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	0.0322					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0800e-003	1.1000e-004	0.0115	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0245	0.0245	7.0000e-005		0.0262
Total	**0.2119**	**1.1000e-004**	**0.0115**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0245**	**0.0245**	**7.0000e-005**		**0.0262**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

Appendix B

Biological Resources Reports:

CNDDB Occurrence Report

IPaC Trust Resources Report

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Natividad (3612165))

Map Index Number: 55536

Key Quad: Natividad (3612165)

Occurrence Number: 797

EO Index: 55536

Element Code: AAAAA01180

Occurrence Last Updated: 2004-05-19

Scientific Name: *Ambystoma californiense*

Common Name: California tiger salamander

Listing Status: **Federal:** Threatened

State: Threatened

CNDDB Element Ranks: **Global:** G2G3

State: S2S3

Rare Plant Rank:

Other Lists: CDFW_WL-Watch List
IUCN_VU-Vulnerable

General Habitat:

CENTRAL VALLEY DPS FEDERALLY LISTED AS THREATENED. SANTA BARBARA AND SONOMA COUNTIES DPS FEDERALLY LISTED AS ENDANGERED.

Micro Habitat:

NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS, AND VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING.

Last Date Observed: 2002-11-08

Last Survey Date: 2002-11-08

Owner/Manager: MNT COUNTY

Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence

Occurrence Rank: Unknown

Trend: Unknown

Location:

ALONG OLD STAGE ROAD, 1.5 MILES SSE OF NATIVIDAD, NE OF SALINAS.

Detailed Location:

SURROUNDING LAND USE IN THIS AREA CONSISTS OF ROW-CROP AGRICULTURE, RURAL RESIDENTIAL HOUSING, ROCK QUARRY, AND CATTLE GRAZING; AS A RESULT, HABITAT QUALITY RANGES FROM EXCELLENT TO POOR.

Ecological:

SURROUNDING HABITAT CONSISTS OF ANNUAL GRASSLANDS TO THE EAST OF OLD STAGE ROAD AND MOSTLY AGRICULTURAL FIELDS TO THE WEST, EXCEPT FOR A REMNANT PATCH OF ANNUAL GRASSLAND. HORNED LARK AND CA RED-LEGGED FROG ALSO FOUND IN THE VICINITY.

Threats:

POTENTIAL THREAT OF ENCROACHMENT BY THE SPREAD OF SALINAS TO OLD STAGE ROAD.

General:

ONE ADULT ROAD-KILL FOUND ON 8 NOV 2002, TAXONOMIC STATUS UNCERTAIN.

PLSS: T14S, R03E, Sec. 13 (M)

Accuracy: 80 meters

Area (acres): 0

UTM: Zone-10 N4064032 E626103

Latitude/Longitude: 36.71361 / -121.58804

Elevation (feet): 140

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

MOR02F0012	MORI, B. - FIELD SURVEY FORM FOR AMBYSTOMA CALIFORNIENSE 2002-11-08

Map Index Number: 60480

Key Quad: Natividad (3612165)

Occurrence Number: 826

EO Index: 60516

Element Code: AAAAA01180

Occurrence Last Updated: 2013-03-29

Scientific Name: *Ambystoma californiense*

Common Name: California tiger salamander

Listing Status: **Federal:** Threatened

State: Threatened

CNDDB Element Ranks: **Global:** G2G3

State: S2S3

Rare Plant Rank:

Other Lists: CDFW_WL-Watch List
IUCN_VU-Vulnerable

General Habitat:

CENTRAL VALLEY DPS FEDERALLY LISTED AS THREATENED. SANTA BARBARA AND SONOMA COUNTIES DPS FEDERALLY LISTED AS ENDANGERED.

Micro Habitat:

NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS, AND VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING.

Last Date Observed: 2004-05-24

Last Survey Date: 2004-05-24

Owner/Manager: PVT

Presence: Extirpated

Occurrence Type: Natural/Native occurrence

Occurrence Rank: None

Trend: Unknown

Location:

DRAINAGE CHANNEL (POND), TRIBUTARY TO NATIVIDAD CREEK, NE OF SALINAS.

Detailed Location:

IT'S ASSUMED THAT NATIVE SALAMANDERS ORIGINALLY OCCURRED HERE AND THAT NON-NATIVE SALAMANDERS USED FOR BAIT INVADED THE AREA AND OUT COMPETED THE NATIVES.

Ecological:

HABITAT CONSISTS OF AN AGRICULTURAL IRRIGATION POND, BUILT WITHIN A DRAINAGE CANAL, WHICH IS ARTIFICIALLY MAINTAINED THROUGH GROUNDWATER PUMPING AND FROM AGRICULTURAL RUNOFF. POND WATER IS TURBID AND VEGETATION IS LACKING AROUND MARGINS.

Threats:

THREATENED BY A FUTURE 2400-ACRE ANNEXATION/DEVELOPMENT & THE PRESENCE OF ONLY NON-NATIVE & HYBRID TIGER SALAMANDERS.

General:

TIGER SALAMANDER LARVAE FIRST OBSERVED ON 7 APR 2004 DURING PROTOCOL SURVEYS FOR CTS; PONDS RE-SAMPLED, 19 MAY 2004, AND TISSUE SAMPLES WERE COLLECTED FOR DNA ANALYSIS. 50 WERE COLLECTED; RESULTS INDICATE ONLY NON-NATIVES & HYBRIDS PRESENT.

PLSS: T14S, R03E, Sec. 24, NW (M)

Accuracy: 80 meters

Area (acres): 0

UTM: Zone-10 N4062823 E625419

Latitude/Longitude: 36.70280 / -121.59589

Elevation (feet): 100

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

MOR04F0006	MORI, B. - FIELD SURVEY FORM FOR AMBYSTOMA CALIFORNIENSE (HYBRIDIZED POPULATION) 2004-05-24

Map Index Number: 60481
Key Quad: Natividad (3612165)
Occurrence Number: 827

EO Index: 60517
Element Code: AAAAA01180
Occurrence Last Updated: 2013-03-29

Scientific Name: *Ambystoma californiense*
Common Name: California tiger salamander

Listing Status: **Federal:** Threatened
State: Threatened
CNDDB Element Ranks: **Global:** G2G3
State: S2S3

Rare Plant Rank:
Other Lists: CDFW_WL-Watch List
IUCN_VU-Vulnerable

General Habitat:

CENTRAL VALLEY DPS FEDERALLY LISTED AS THREATENED. SANTA BARBARA AND SONOMA COUNTIES DPS FEDERALLY LISTED AS ENDANGERED.

Micro Habitat:

NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS, AND VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING.

Last Date Observed: 2004-05-24
Last Survey Date: 2004-05-24
Owner/Manager: PVT
Presence: Extirpated

Occurrence Type: Natural/Native occurrence
Occurrence Rank: None
Trend: Unknown

Location:

ABOVE-GRADE POND, JUST WEST OF THE INTERSECTION OF OLD STAGE ROAD AND WILLIAMS ROAD, NE OF SALINAS.

Detailed Location:

IT'S ASSUMED THAT NATIVE SALAMANDERS ORIGINALLY OCCURRED HERE AND THAT NON-NATIVE SALAMANDERS USED FOR BAIT INVADED THE AREA AND OUT COMPETED THE NATIVES.

Ecological:

HABITAT CONSISTS OF AN AGRICULTURAL IRRIGATION POND, BUILT ABOVE GRADE, WHICH IS ARTIFICIALLY MAINTAINED THROUGH GROUNDWATER PUMPING. POND WATER IS CLEAR AND VEGETATION IS LACKING AROUND THE MARGINS.

Threats:

THREATENED BY A FUTURE 2400-ACRE ANNEXATION/DEVELOPMENT & THE PRESENCE OF ONLY NON-NATIVE & HYBRID TIGER SALAMANDERS.

General:

TIGER SALAMANDER LARVAE FIRST OBSERVED ON 7 APR 2004 DURING PROTOCOL SURVEYS FOR CTS; PONDS RE-SAMPLED, 19 MAY 2004, AND TISSUE SAMPLES WERE COLLECTED FOR DNA ANALYSIS. 32 WERE COLLECTED; RESULTS INDICATE ONLY NON-NATIVES & HYBRIDS PRESENT.

PLSS: T14S, R04E, Sec. 19, NW (M)
UTM: Zone-10 N4062405 E627319

Accuracy: 80 meters
Latitude/Longitude: 36.69878 / -121.57470

Area (acres): 0
Elevation (feet): 100

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

MOR04F0006	MORI, B. - FIELD SURVEY FORM FOR AMBYSTOMA CALIFORNIENSE (HYBRIDIZED POPULATION) 2004-05-24

Map Index Number:	70030	**EO Index:**	70883
Key Quad:	Natividad (3612165)	**Element Code:**	AAAAA01180
Occurrence Number:	993	**Occurrence Last Updated:**	2008-03-27

Scientific Name:		*Ambystoma californiense*	**Common Name:**	California tiger salamander
Listing Status:	**Federal:**	Threatened	**Rare Plant Rank:**	
	State:	Threatened	**Other Lists:**	CDFW_WL-Watch List IUCN_VU-Vulnerable
CNDDB Element Ranks:	**Global:**	G2G3		
	State:	S2S3		

General Habitat:

CENTRAL VALLEY DPS FEDERALLY LISTED AS THREATENED. SANTA BARBARA AND SONOMA COUNTIES DPS FEDERALLY LISTED AS ENDANGERED.

Micro Habitat:

NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS, AND VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING.

Last Date Observed:	2007-09-05	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2007-09-05	**Occurrence Rank:**	Fair
Owner/Manager:	PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

EAST SIDE OF NATIVIDAD ROAD, 0.4 MILE NNE OF EAST BORONDA ROAD, NORTH OF SALINAS.

Detailed Location:

Ecological:

HABITAT CONSISTS OF A~0.25-ACRE AGRICULTURAL BASIN (~5' DEEP), WITH SUBSTANTIAL SUBMERGENT AND EMERGENT VEGETATION; BASIN IS SURROUNDED BY ACTIVE AGRICULTURAL PRODUCTION IN ALL DIRECTIONS.

Threats:

THREATENED BY PROPOSED URBAN DEVELOPMENT AND THE PRESENCE OF HYBRIDIZED TIGER SALAMANDERS WITHIN 2-3 MILES.

General:

30 LARVAE OBSERVED ON 5 SEP 2007. 22 LARVAL TAIL CLIPPINGS COLLECTED FOR GENETIC TESTING BY THE UCD SHAFFER LAB. RESULTS FROM SHAFFER LAB CONCLUDE THAT THE LARVAE SAMPLED ARE HYBRIDS (HIS VALUE = 0.80-1.00).

PLSS:	T14S, R03E, Sec. 10 (M)	**Accuracy:**	80 meters	**Area (acres):**	0
UTM:	Zone-10 N4064795 E623105	**Latitude/Longitude:**	36.72088 / -121.62147	**Elevation (feet):**	137

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

JOH07R0001	JOHNSON, J. & H. SHAFFER (UNIVERSITY OF CALIFORNIA, DAVIS) - REPORT FROM SHAFFER LAB STATING THAT THE SALAMANDER LARVAE AT THIS LOCATION ARE HYBRIDS. 2007-10-28
KEE07F0002	KEEGAN, D. & J. HARWAYNE - FIELD SURVEY FORM FOR AMBYSTOMA CALIFORNIENSE 2007-09-05
KEE08U0001	KEEGAN, D. (D.R. DUFFY AND ASSOCIATES) - EMAIL REGARDING AMBYSTOMA CALIFORNIENSE HYBRID LARVAE. 2008-03-13

Map Index Number: 49999
EO Index: 49999
Key Quad: Natividad (3612165)
Element Code: AAABH01022
Occurrence Number: 601
Occurrence Last Updated: 2005-01-19

Scientific Name: *Rana draytonii*
Common Name: California red-legged frog

Listing Status: **Federal:** Threatened
State: None
Rare Plant Rank:
Other Lists: CDFW_SSC-Species of Special Concern
IUCN_VU-Vulnerable

CNDDB Element Ranks: **Global:** G2G3
State: S2S3

General Habitat:

LOWLANDS AND FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro Habitat:

REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Last Date Observed: 2004-05-12
Occurrence Type: Natural/Native occurrence
Last Survey Date: 2004-05-12
Occurrence Rank: Fair
Owner/Manager: MNT COUNTY, CALTRANS
Trend: Unknown
Presence: Presumed Extant

Location:

UNNAMED TRIBUTARY TO NATIVIDAD CREEK, FROM OLD STAGE ROAD EXTENDING SE FOR ABOUT 1.3 MILES, SOUTH OF NATIVIDAD.

Detailed Location:

Ecological:

HABITAT CONSISTS OF INTERMITTENT PERENNIAL CREEKS MANAGED AS AGRICULTURAL RUNOFF DITCHES; SURROUNDED BY AG FIELDS, LOW DENSITY RESIDENTIAL, AND GRAZED ANNUAL GRASSLAND. LARGE RESERVOIRS / STOCK PONDS ARE FOUND IN THE VICINITY.

Threats:

THREATENED BY URBAN EXPANSION OF SALINAS AND PRESENCE OF BULLFROGS IN THE DRAINAGE.

General:

1 YOY FROG (SVL = 1.5") OBSERVED ON 9 DEC 2002. 1 DOA ADULT OBSERVED ON 12 FEB 2003 ON OLD STAGE ROAD, AND 1 LIVE ADULT IN AN ADJACENT CULVERT POOL OBSERVED ON 19 FEB 2003. 5 ADULTS OBSERVED ON 29 OCT 2003. 2 ADULTS OBSERVED ON 12 MAY 2004.

PLSS: T14S, R03E, Sec. 13 (M)
Accuracy: specific area
Area (acres): 84
UTM: Zone-10 N4063786 E625713
Latitude/Longitude: 36.71144 / -121.59244
Elevation (feet): 111

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

KIR03F0001	KIRK, H. (WRA, INC.) - FIELD SURVEY FORM FOR RANA DRAYTONII 2003-10-29
MOR02F0005	MORI, B. - FIELD SURVEY FORM FOR RANA DRAYTONII 2002-12-09
MOR03F0001	MORI, B. - FIELD SURVEY FORM FOR RANA DRAYTONII 2003-02-12
MOR04F0004	MORI, B. - FIELD SURVEY FORM FOR RANA DRAYTONII 2004-05-12
MOR04U0001	MORI, B. (BRYAN M. MORI BIOLOGICAL CONSULTING SERVICES) - FEDERAL FISH AND WILDLIFE PERMIT TE778668-3 & CALIFORNIA SCIENTIFIC COLLECTING PERMIT 801007-02 YEAR 2003 ANNUAL REPORT. 2004-01-08

Map Index Number:	59465	**EO Index:**	59501
Key Quad:	Natividad (3612165)	**Element Code:**	ABNKC12040
Occurrence Number:	98	**Occurrence Last Updated:**	2005-01-19

Scientific Name:	*Accipiter cooperii*	**Common Name:**	Cooper's hawk

Listing Status:	**Federal:**	None	**Rare Plant Rank:**	
	State:	None	**Other Lists:**	CDFW_WL-Watch List IUCN_LC-Least Concern
CNDDB Element Ranks:	**Global:**	G5		
	State:	S4		

General Habitat:

WOODLAND, CHIEFLY OF OPEN, INTERRUPTED OR MARGINAL TYPE.

Micro Habitat:

NEST SITES MAINLY IN RIPARIAN GROWTHS OF DECIDUOUS TREES, AS IN CANYON BOTTOMS ON RIVER FLOOD-PLAINS; ALSO, LIVE OAKS.

Last Date Observed:	2004-05-24	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2004-05-24	**Occurrence Rank:**	Fair
Owner/Manager:	NATIVIDAD CREEK CITY PARKWAY	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

1.6 MILES WEST OF THE INTERSECTION OF WILLIAMS ROAD AND OLD STAGE ROAD, NE OF SALINAS.

Detailed Location:

NEST TREE IS LOCATED ALONG A CITY PARKWAY.

Ecological:

NEST TREE IS A TALL, MATURE WILLOW; SURROUNDING HABITAT CONSISTS OF A WILLOW RIPARIAN CORRIDOR ALONG NATIVIDAD CREEK. SURROUNDING AREA IS A MIX OF AGRICULTURAL FIELDS AND HIGH-DENSITY HOUSING.

Threats:

General:

2 ADULTS AND DOWNY NESTLINGS OBSERVED IN THE NEST ON 24 MAY 2004.

PLSS:	T14S, R03E, Sec. 23 (M)	**Accuracy:**	80 meters	**Area (acres):**	0
UTM:	Zone-10 N4062662 E624854	**Latitude/Longitude:**	36.70143 / -121.60224	**Elevation (feet):**	80

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

MOR04F0007	MORI, B. - FIELD SURVEY FORM FOR ACCIPITER COOPERII (NEST SITE) 2004-05-24

Map Index Number:	A5284	**EO Index:**	107004
Key Quad:	Natividad (3612165)	**Element Code:**	ABNME01010
Occurrence Number:	27	**Occurrence Last Updated:**	2017-07-12

Scientific Name: *Coturnicops noveboracensis* **Common Name:** yellow rail

Listing Status:	**Federal:**	None	**Rare Plant Rank:**	
	State:	None	**Other Lists:**	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern NABCI_RWL-Red Watch List USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern
CNDDB Element Ranks:	**Global:**	G4		
	State:	S1S2		

General Habitat:

SUMMER RESIDENT IN EASTERN SIERRA NEVADA IN MONO COUNTY.

Micro Habitat:

FRESHWATER MARSHLANDS.

Last Date Observed:	2014-10-30	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2014-10-30	**Occurrence Rank:**	Unknown
Owner/Manager:	UNKNOWN	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

CESAR CHAVEZ ELEMENTARY SCHOOL, SALINAS.

Detailed Location:

Ecological:

Threats:

General:

INJURED/EXHAUSTED BIRD FOUND ON SCHOOL GROUNDS ON 30 OCT 2014; DIED BEFORE IT COULD BE BROUGHT TO WILDLIFE REHABILITATION CENTER.

PLSS:	T14S, R03E, Sec. 26, NE (M)	**Accuracy:**	1/5 mile	**Area (acres):**	70
UTM:	Zone-10 N4061125 E624685	**Latitude/Longitude:**	36.6876 / -121.6044	**Elevation (feet):**	114

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

KAU14U0001	KAUFMAN, M. - M. KAUFMAN'S CHECKLIST S20531418 FROM EBIRD: AN ONLINE DATABASE OF BIRD DISTRIBUTION AND ABUNDANCE. ITHACA, NEW YORK. AVAILABLE: HTTP://WWW.EBIRD.ORG. (ACCESSED: 20170706) 2014-10-30

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number:	30774	**EO Index:**	4111
Key Quad:	Natividad (3612165)	**Element Code:**	ABNSB10010
Occurrence Number:	224	**Occurrence Last Updated:**	1999-12-23

Scientific Name: *Athene cunicularia*

Common Name: burrowing owl

Listing Status: **Federal:** None

State: None

CNDDB Element Ranks: **Global:** G4

State: S3

Rare Plant Rank:

Other Lists:
BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_LC-Least Concern
USFWS_BCC-Birds of Conservation Concern

General Habitat:

OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.

Micro Habitat:

SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Last Date Observed:	1999-07-16	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	1999-07-16	**Occurrence Rank:**	Good
Owner/Manager:	CITY OF SALINAS	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

SALINAS AIRPORT, EAST OF HIGHWAY 101, SALINAS.

Detailed Location:

SEVERAL PAIRS OF BURROWING OWLS BREED ON AIRPORT PROPERTY, USUALLY BETWEEN TAXIWAYS AND RUNWAYS.

Ecological:

HABITAT CONSISTS OF NON-NATIVE ANNUAL GRASSLAND.

Threats:

POSSIBLE THREAT FROM ROUTINE AIRPORT OPERATIONS.

General:

2 ADULTS AND 4 JUVENILES OBSERVED AT THE BURROW SITE ON 10 JULY 1994. ONE PAIR OBSERVED AT THE WESTERN END OF AIRPORT RUNWAY; NO JUVENILES OBSERVED, 1999.

PLSS:	T15S, R03E, Sec. 02 (M)	**Accuracy:**	nonspecific area	**Area (acres):**	404
UTM:	Zone-10 N4058401 E624414	**Latitude/Longitude:**	36.66309 / -121.60787	**Elevation (feet):**	70

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

BAR94F0002	BARCLAY, J. (BIOSYSTEMS ANALYSIS, INC.) - FIELD SURVEY FORM FOR ATHENE (=SPEOTYTO) CUNICULARIA (BURROW SITE) 1994-07-10
BLA99F0004	BLAND, D. - FIELD SURVEY FORM FOR ATHENE CUNICULARIA (SSP. - HYPUGEA), BURROWING OWL 1999-07-16

Map Index Number:	69287	**EO Index:**	70072
Key Quad:	Natividad (3612165)	**Element Code:**	ABNSB10010
Occurrence Number:	933	**Occurrence Last Updated:**	2007-07-13

Scientific Name: *Athene cunicularia*

Common Name: burrowing owl

Listing Status:	**Federal:**	None	**Rare Plant Rank:**	
	State:	None	**Other Lists:**	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern
CNDDB Element Ranks:	**Global:**	G4		
	State:	S3		

General Habitat:

OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.

Micro Habitat:

SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Last Date Observed:	2007-02-15	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2007-02-15	**Occurrence Rank:**	Poor
Owner/Manager:	PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

EAST OF SALINAS, ABOUT 0.7 MILE ENE OF INTERSECTION OF ALISAL ROAD AND WILLIAMS RD.

Detailed Location:

MAPPED ACCORDING TO LAT/LONG COORDINATES AND USING THE MAP ATTACHED TO SOURCE.

Ecological:

OPEN FALLOW AGRICULTURAL FIELD SUPPORTING RUDERAL WEED SPECIES ON FLAT TERRAIN.

Threats:

SCHEDULED FOR DEVELOPMENT OF A PUBLIC ELEMENTARY SCHOOL AND PARK.

General:

BURROW SITE. 1 ADULT OBSERVED ON 15 FEB 2007.

PLSS:	T14S, R03E, Sec. 25, SW (M)	**Accuracy:**	80 meters	**Area (acres):**	0
UTM:	Zone-10 N4060444 E625565	**Latitude/Longitude:**	36.68135 / -121.59465	**Elevation (feet):**	130

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

SIE07F0002	SIEMENS, M. (LFR, INC.) - FIELD SURVEY FORM FOR ATHENE CUNICULARIA (BURROW SITE) 2007-02-15

Map Index Number:	55863	**EO Index:**	55879
Key Quad:	Natividad (3612165)	**Element Code:**	ABPAT02011
Occurrence Number:	58	**Occurrence Last Updated:**	2004-06-22

Scientific Name: *Eremophila alpestris actia*

Common Name: California horned lark

Listing Status: **Federal:** None

State: None

Rare Plant Rank:

Other Lists: CDFW_WL-Watch List
IUCN_LC-Least Concern

CNDDB Element Ranks: **Global:** G5T4Q

State: S4

General Habitat:

COASTAL REGIONS, CHIEFLY FROM SONOMA COUNTY TO SAN DIEGO COUNTY. ALSO MAIN PART OF SAN JOAQUIN VALLEY AND EAST TO FOOTHILLS.

Micro Habitat:

SHORT-GRASS PRAIRIE, "BALD" HILLS, MOUNTAIN MEADOWS, OPEN COASTAL PLAINS, FALLOW GRAIN FIELDS, ALKALI FLATS.

Last Date Observed:	2002-06-04	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2002-06-04	**Occurrence Rank:**	Poor
Owner/Manager:	PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

1.8 MILES SOUTH OF THE INTERSECTION OF OLD STAGE ROAD AND NATIVIDAD ROAD, 3.5 MILES NE OF SALINAS.

Detailed Location:

WEST OF OLD STAGE ROAD.

Ecological:

HABITAT CONSISTS OF MOSTLY AGRICULTURAL & HORTICULTURAL FIELDS. SOME AREAS FALLOW FOR SHORT PERIOD. GRASSLAND/RUDERAL PATCHES PRESENT. FORMERLY, AREA WAS LIKELY ANNUAL GRASSLAND. SURR AREA: AGRICULTURE, HORTICULTURE, RURAL RESIDENTIAL.

Threats:

THREATENED BY EXPANSION OF SALINAS EASTWARD.

General:

UP TO 7 PAIRS MAY HAVE NESTED IN 2002. FLEDGLINGS WERE ALSO OBSERVED IN 2002. TOTAL NUMBER OF INDIVIDUALS OBSERVED WAS FEWER THAN 20.

PLSS:	T14S, R03E, Sec. 13, W (M)	**Accuracy:**	nonspecific area	**Area (acres):**	161
UTM:	Zone-10 N4064200 E625344	**Latitude/Longitude:**	36.71523 / -121.59651	**Elevation (feet):**	100

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

MOR02F0013	MORI, B. - FIELD SURVEY FORM FOR EREMOPHILA ALPESTRIS ACTIA 2002-06-04

Map Index Number: 55144
Key Quad: Natividad (3612165)
Occurrence Number: 394

EO Index: 55144
Element Code: ABPBXB0020
Occurrence Last Updated: 2016-11-14

Scientific Name: *Agelaius tricolor*

Common Name: tricolored blackbird

Listing Status: **Federal:** None
State: Candidate Endangered

CNDDB Element Ranks: **Global:** G2G3
State: S1S2

Rare Plant Rank:

Other Lists:
BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_EN-Endangered
NABCI_RWL-Red Watch List
USFWS_BCC-Birds of Conservation Concern

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed: 2001-XX-XX
Last Survey Date: 2014-04-20
Owner/Manager: PVT
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:

ABOUT 0.4 MILE SOUTH OF THE INTERSECTION OF OLD STAGE ROAD AND ZABALA ROAD, ABOUT 5 MILES ESE OF SALINAS.

Detailed Location:

COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "OLD STAGE ROAD POND #2." MAPPED TO PROVIDED LOCATION IN PORTAL AND LOCATION DESCRIPTION OF "FARM POND ON W SIDE OF OLD STAGE RD, JUST S OF ZABALA RD."

Ecological:

HABITAT COMPOSED OF A FARM POND WITH BULRUSHES AND WILLOWS. DURING THE 1994 SURVEY THE SITE DESCRIBED AS BEING ACTIVE THE PREVIOUS 10 YEARS.

Threats:

POTENTIAL THREAT DUE TO WATER DIVERTION, DREDGING, OF DRYING.

General:

30 OBS ON 24 APR 1994; POSSIBLY NESTING. 45 OBS NESTING ON 21 APR 1995. 100 OBS ON 20 MAY 1995; MOSTLY YOUNG. 140 OBS NESTING IN APR 1996; 0 BY 15 MAY. 0 OBS IN MAY 1999 & APR 2000. 250 OBS NESTING ON 24 APR 2001. 0 OBS ON 20 APR 2014.

PLSS:	T15S, R04E, Sec. 5, NE (M)	**Accuracy:**	1/10 mile	**Area (acres):**	18
UTM:	Zone-10 N4058157 E629799	**Latitude/Longitude:**	36.66017 / -121.54768	**Elevation (feet):**	121

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

DFG04U0002	CALIFORNIA DEPARTMENT OF FISH & GAME - TRICOLORED BLACKBIRD BREEDING OBSERVATIONS 1980-2000, BIOS DS20. 2004-XX-XX
FIT95F0024	FITTON, S. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1995-04-21
FIT96F0020	FITTON, S. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1996-04-XX
FIT96F0023	FITTON, S. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1996-05-15
FIT99F0021	FITTON, S. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1999-05-06
HAM95U0002	HAMILTON, B. - TRICOLORED BLACKBIRD SURVEY RESULTS IN WESTERN FRESNO, SAN BENITO, AND MONTEREY COUNTIES 1995-05-20
HUM02R0001	HUMPLE, D. & R. CHURCHWELL (PRBO CONSERVATION SCIENCE) - TRICOLORED BLACKBIRD SURVEY REPORT 2001. DRAFT. PREPARED FOR U. S. FISH AND WILDLIFE SERVICE. 2002-04-XX
ROB94F0009	ROBERSON, D. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1994-04-24
TEN00F0003	TENNEY, C. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 2000-04-21
TRI14D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 1907-2014 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2014-XX-XX

Map Index Number:	59462	**EO Index:**	59498
Key Quad:	Natividad (3612165)	**Element Code:**	ABPBXB0020
Occurrence Number:	430	**Occurrence Last Updated:**	2005-01-19

Scientific Name: *Agelaius tricolor*

Common Name: tricolored blackbird

Listing Status:	**Federal:**	None	**Rare Plant Rank:**	
	State:	Candidate Endangered	**Other Lists:**	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern
CNDDB Element Ranks:	**Global:**	G2G3		
	State:	S1S2		

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed:	2004-05-19	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2004-05-19	**Occurrence Rank:**	Fair
Owner/Manager:	PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

0.5 MILE SOUTH OF THE INTERSECTION OF WILLIAMS ROAD AND OLD STAGE ROAD, NE OF SALINAS.

Detailed Location:

THIS SITE MAY HAVE BEEN DOCUMENTED BY BEEDY IN 1991 AS A BREEDING SITE.

Ecological:

NESTING SUBSTRATE CONSISTS OF DENSE TULE PATCH GROWING ON AN ARTIFICIALLY MAINTAINED, ABOVE-GRADE IRRIGATION POND USED FOR LARGE-SCALE AGRICULTURE. POND SURROUNDED BY ROW-CROP AGRICULTURE, WITH ANNUAL GRASSLAND TO THE EAST & NE OF THE POND.

Threats:

POSSIBLE THREAT FROM POND VEGETATION MAINTENANCE.

General:

ESTIMATED 1000 ADULTS OBSERVED NESTING ON 19 MAY 2004.

PLSS:	T14S, R04E, Sec. 30 (M)	**Accuracy:**	80 meters	**Area (acres):**	0
UTM:	Zone-10 N4061525 E627437	**Latitude/Longitude:**	36.69084 / -121.57353	**Elevation (feet):**	200

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

MOR04F0005	MORI, B. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR (NESTING COLONY) 2004-05-19

Map Index Number:	A1884	**EO Index:**	103484
Key Quad:	Natividad (3612165)	**Element Code:**	ABPBXB0020
Occurrence Number:	953	**Occurrence Last Updated:**	2016-10-19

Scientific Name: *Agelaius tricolor*

Common Name: tricolored blackbird

Listing Status: **Federal:** None

State: Candidate Endangered

CNDDB Element Ranks: **Global:** G2G3

State: S1S2

Rare Plant Rank:

Other Lists:
BLM_S-Sensitive
CDFW_SSC-Species of Special Concern
IUCN_EN-Endangered
NABCI_RWL-Red Watch List
USFWS_BCC-Birds of Conservation Concern

General Habitat:

HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro Habitat:

REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Last Date Observed:	2008-04-26	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2014-04-20	**Occurrence Rank:**	Unknown
Owner/Manager:	UNKNOWN, PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

ON E SIDE OF OLD STAGE RD, 1 MI SSE OF ZABALA RD INTERSECTION, 1.5 MI N OF ALISAL RD INTERSECTION, E OF SALINAS.

Detailed Location:

COLONY DATA STORED IN THE UC DAVIS TRICOLORED BLACKBIRD PORTAL; SITE NAME WAS "OLD STAGE ROAD POND #1." MAPPED TO PROVIDED LOCATION IN PORTAL AND LOCATION DESCRIPTION OF "FARM POND ON E SIDE OF OLD STAGE ROAD, BETWEEN ZABALA & ALISAL RD."

Ecological:

POND SURROUNDED BY CATTAILS AND BULRUSHES. MOST OF THE FRINGE USED BY RED-WINGED BLACKBIRDS. POND DRY IN 2014. NESTING COULD NOT BE CONFIRMED FOR MOST OBSERVATIONS BUT YEARLY USE OF SITE CAN SUGGEST NESTING.

Threats:

General:

30 OBS IN APR 1994. 30-38 OBS ON APR-MAY 1995. 75-270 OBS IN APR-MAY 1996. 100 OBS ON 30 APR 1997. 0 OBS ON 6 MAY 1999. 10-20 OBS NESTING ON 21-22 APR 2000. 10 OBS ON 24 APR 2001. 700 OBS ON 26 APR 2008; NESTING. 0 OBS ON 20 APR 2014.

PLSS:	T15S, R04E, Sec. 4, SW (M)	**Accuracy:**	1/10 mile	**Area (acres):**	18
UTM:	Zone-10 N4057447 E630415	**Latitude/Longitude:**	36.65369 / -121.54091	**Elevation (feet):**	121

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

BAN97F0005	BANKS, J. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1997-04-30
DAV00F0011	DAVIS, J. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 2000-04-22
DAV00U0002	DAVIS, J. - E-MAIL REGARDING TRICOLORED BLACKBIRDS IN MONTEREY COUNTY 2000-04-24
DFG04U0002	CALIFORNIA DEPARTMENT OF FISH & GAME - TRICOLORED BLACKBIRD BREEDING OBSERVATIONS 1980-2000, BIOS DS20. 2004-XX-XX
FIT95F0025	FITTON, S. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1995-04-21
FIT96F0021	FITTON, S. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1996-04-XX
FIT96F0022	FITTON, S. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1996-05-15
FIT99F0022	FITTON, S. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1999-05-06
HAM95U0002	HAMILTON, B. - TRICOLORED BLACKBIRD SURVEY RESULTS IN WESTERN FRESNO, SAN BENITO, AND MONTEREY COUNTIES 1995-05-20
ROB94F0010	ROBERSON, D. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 1994-04-24
TEN00F0004	TENNEY, C. - FIELD SURVEY FORM FOR AGELAIUS TRICOLOR 2000-04-21
TRI14D0001	TRICOLORED BLACKBIRD PORTAL - ICE (UNIVERSITY OF CALIFORNIA, DAVIS) - 1907-2014 TRICOLORED BLACKBIRD RECORDS FROM UC DAVIS TRICOLORED BLACKBIRD PORTAL, INFORMATION CENTER FOR THE ENVIRONMENT (ICE) 2014-XX-XX

Occurrence Report

California Department of Fish and Wildlife

California Natural Diversity Database

Map Index Number:	B1847	**EO Index:**	113761
Key Quad:	San Juan Bautista (3612175)	**Element Code:**	AMAFD03042
Occurrence Number:	25	**Occurrence Last Updated:**	2019-01-25

Scientific Name: *Dipodomys venustus venustus*

Common Name: Santa Cruz kangaroo rat

Listing Status: **Federal:** None

State: None

Rare Plant Rank:

Other Lists:

CNDDB Element Ranks: **Global:** G4T1

State: S1

General Habitat:

SILVERLEAF MANZANITA MIXED CHAPARRAL IN THE ZAYANTE SAND HILLS ECOSYSTEM OF THE SANTA CRUZ MOUNTAINS.

Micro Habitat:

NEEDS SOFT, WELL-DRAINED SAND.

Last Date Observed:	1985-08-04	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	1985-08-04	**Occurrence Rank:**	Unknown
Owner/Manager:	UNKNOWN	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

VICINITY OF FREMONT PEAK.

Detailed Location:

SPECIMEN LOCALITIES INCLUDING "FREMONT PEAK" (1907, 1940, 1955), "FREMONT PEAK RD, 7 MI S SAN JUAN" (1940), "7 MI SW HOLLISTER, N SIDE FREMONT PEAK" (1954), & " 7.7 MI S BY ROAD OF ROUTE 156 ON SAN JUAN CANYON ROAD" (1983, 1985).

Ecological:

SOME SPECIMENS IDED AS D. ELEPHANTINUS. THE FREMONT PEAK/N GABILANS AREA IS BELIEVED TO BE THE SOUTHERN EXTENT OF SSP. VENUSTUS BASED ON GRINNELL (1922), WHO ALSO THOUGHT THIS COULD BE AN AREA OF INTERGRADE; FURTHER GENETIC WORK IS NEEDED.

Threats:

General:

1 COLLECTED ON 2 NOV, 4 ON 3 NOV 1907. 6 COLLECTED ON 21 JUL, 5 ON 23 JUL, & 1 ON 24 JUL 1940. 1 ON 3 DEC 1954. 1 ON 26 AUG 1955. 2 ON 4 APR 1983. 3 COLLECTED ON 13 JUL, 2 ON 18 JUL, 1 ON 28 JUL, & 2 ON 4 AUG 1985.

PLSS:	T13S, R04E, Sec. 35 (M)	**Accuracy:**	1 mile	**Area (acres):**	1,987
UTM:	Zone-10 N4068985 E633514	**Latitude/Longitude:**	36.75723 / -121.50423	**Elevation (feet):**	3,151

County Summary:	**Quad Summary:**
Monterey, San Benito	Mt. Harlan (3612164), Natividad (3612165), Hollister (3612174), San Juan Bautista (3612175)

Sources:

BES96A0001	BEST, T. ET AL. - GENIC AND MORPHOMETRIC VARIATION IN KANGAROO RATS, GENUS DIPODOMYS, FROM COASTAL CALIFORNIA. JOURNAL OF MAMMALOGY 77(3):785-800. 1996-08-XX
GOL07S0004	GOLDMAN, E. - USNM #150938, 105940, 105941, 105942 COLLECTED FROM FREEMONT PEAK, GABILAN RANGE [SIC] 1907-11-03
GOL07S0005	GOLDMAN, E. - USNM #150939 COLLECTED FROM FREEMONT PEAK, GABILAN RANGE [SIC] 1907-11-02
GRI22A0001	GRINNELL, J. - A GEOGRAPHICAL STUDY OF THE KANGAROO RATS OF CALIFORNIA. UNIVERSITY OF CALIFORNIA PUBLICATIONS IN ZOOLOGY 24:1-124 1922-XX-XX
MUR54S0002	MURRAY, K. - SBMNH #4014 COLLECTED 7MI SW HOLLISTER; N SIDE FREEMONT PEAK 1954-12-03
MUR55S0005	MURRAY, K. - SBMNH #4002 COLLECTED FROM FREMONT PEAK. 1955-08-26
NAC83S0001	NACHMAN, M. - MVZ 171936, 171937 COLLECTED 7.7 MI S BY ROAD OF ROUTE 156 ON SAN JUAN CANYON ROAD. 1983-04-04
NAC85S0001	NACHMAN, M. - UMMZ #165483, 165484, 165485 COLLECTED 7.7 MI S BY ROAD OF ROUTE 156 ON SAN JUAN CANYON ROAD. 1985-07-13
NAC85S0002	NACHMAN, M. - UMMZ #165486, 165487 COLLECTED 7.7 MI S BY ROAD OF ROUTE 156 ON SAN JUAN CANYON ROAD. 1985-07-18
NAC85S0003	NACHMAN, M. - UMMZ #166673 COLLECTED 7.7 MI S BY ROAD OF ROUTE 156 ON SAN JUAN CANYON ROAD. 1985-07-28
NAC85S0004	NACHMAN, M. - UMMZ #166672, 166678 COLLECTED 7.7 MI S BY ROAD OF ROUTE 156 ON SAN JUAN CANYON ROAD. 1985-08-04
PAT19U0001	PATTON, J. - EMAIL COMMUNICATION REGARDING D. VENUSTUS SPECIMENS FROM THE FREMONT PEAK AREA. 2019-01-04
RUD40S0010	RUDD, R. - MVZ #98025, 98026, 108384, 108385 & 108386 COLLECTED FROM FREMONT PEAK RD, 7 MI S SAN JUAN 1940-07-23
RUD40S0011	RUDD, R. - MVZ #108387 COLLECTED FROM FREMONT PEAK RD., 7 MI S SAN JUAN 1940-07-24
VON40S0003	VON BLOEKER, J. - LACM MAMMALS #007222, 007223, 007224, 007225, 007226, 007227 COLLECTED FROM FREMONT PEAK, GABILAN MOUNTAINS. 1940-07-21

Map Index Number:	50001	**EO Index:**	50001
Key Quad:	Natividad (3612165)	**Element Code:**	ARAAD02030
Occurrence Number:	1120	**Occurrence Last Updated:**	2005-01-19

Scientific Name:	*Emys marmorata*		**Common Name:**	western pond turtle
Listing Status:	**Federal:**	None	**Rare Plant Rank:**	
	State:	None	**Other Lists:**	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive
CNDDB Element Ranks:	**Global:**	G3G4		
	State:	S3		

General Habitat:

A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS AND IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BELOW 6000 FT ELEVATION.

Micro Habitat:

NEEDS BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYING.

Last Date Observed:	2004-05-24	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	2004-05-24	**Occurrence Rank:**	Fair
Owner/Manager:	PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

NORTH OF WILLIAMS ROAD AND WEST OF OLD STAGE ROAD, NE OF SALINAS.

Detailed Location:

2 AG PONDS USED TO IRRIGATE STRAWBERRY FIELDS. DIFFERENCES IN THE SIZE CLASSES OF TURTLES FOUND AT THIS LOCATION IS SUGGESTIVE OF A BREEDING POPULATION.

Ecological:

HABITAT CONSISTS OF NATIVIDAD CREEK AND SCATTERED AGRICULTURAL PONDS. PONDS ARE LACKING EMERGENT VEGATATION; POND DEPTH >4', DENSE AQUATIC VEGETATION AND ALGAE PRESENT. SURROUNDING LAND IS AG, RESIDENTIAL AND ANNUAL GRASSLAND PATCHES.

Threats:

THREATENED BY THE ANNEXATION OF 2400 ACRES BY THE CITY OF SALINAS.

General:

12 TURTLES (CARAPACE LENGTH = 4-8") OBSERVED ON 17 APR 2002. 1 ROAD-KILL ADULT (CARAPACE LENGTH = 8") AND 2 SUBADULTS (CARAPACE LENGTH = 5-6") IN NATIVIDAD CREEK/TRIBS OBSERVED ON 24 MAY 2004.

PLSS:	T14S, R03E, Sec. 14, NE (M)	**Accuracy:**	specific area	**Area (acres):**	28
UTM:	Zone-10 N4063518 E625098	**Latitude/Longitude:**	36.70911 / -121.59937	**Elevation (feet):**	96

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

MOR02F0004	MORI, B. - FIELD SURVEY FORM FOR CLEMMYS MARMORATA PALLIDA 2002-04-17
MOR04F0008	MORI, B. - FIELD SURVEY FORM FOR ACTINEMYS (=EMYS) MARMORATA PALLIDA 2004-05-24

Map Index Number:	25117	**EO Index:**	6089
Key Quad:	Natividad (3612165)	**Element Code:**	PDAST4R0P1
Occurrence Number:	7	**Occurrence Last Updated:**	2000-02-08

Scientific Name: *Centromadia parryi ssp. congdonii*

Common Name: Congdon's tarplant

Listing Status:	**Federal:**	None	**Rare Plant Rank:**	1B.1
	State:	None	**Other Lists:**	BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden
CNDDB Element Ranks:	**Global:**	G3T1T2		
	State:	S1S2		

General Habitat:

VALLEY AND FOOTHILL GRASSLAND.

Micro Habitat:

ALKALINE SOILS, SOMETIMES DESCRIBED AS HEAVY WHITE CLAY. 0-245 M.

Last Date Observed:	1998-10-15	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	1998-10-15	**Occurrence Rank:**	Excellent
Owner/Manager:	PVT	**Trend:**	Stable
Presence:	Presumed Extant		

Location:

ALONG OLD STAGE ROAD BETWEEN NATIVIDAD AND WILLIAMS ROAD, NORTHEAST OF SALINAS.

Detailed Location:

LARGE AREA MAPPED ALONG EAST SIDE OF OLD STAGE ROAD FROM 0.5 MILE SOUTH OF NATIVIDAD SOUTH TO WILLIAMS ROAD, AND UP TO 0.5 MILE EAST OF OLD STAGE ROAD.

Ecological:

ANNUAL GRASSLAND WITH LOLIUM MULTIFLORUM, RUMEX PULCHER, PLANTAGO CORONOPIS, AND HEMIZONIA SP. SOILS MAPPED AS PLANCENTIA SANDY LOAM.

Threats:

GRAZED, BUT GRAZING DOES NOT APPEAR TO BE A THREAT.

General:

214,000 PLANTS OBSERVED AT THIS SITE IN 1998. 1966 AND 1969 HOOVER COLLECTIONS ARE ALSO ATTRIBUTED TO THIS SITE.

PLSS:	T14S, R03E, Sec. 13 (M)	**Accuracy:**	specific area	**Area (acres):**	586
UTM:	Zone-10 N4064160 E626600	**Latitude/Longitude:**	36.71470 / -121.58246	**Elevation (feet):**	150

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

HOO66S0003	HOOVER, R. - HOOVER #9963 UC #1321351, RSA #216800, CAS #491572, OBI #16181 1966-09-08
HOO69S0019	HOOVER, R. - HOOVER #11630 UC #1392636, CAS #536322, OBI #16186 1969-09-29
PRE98F0047	PRESTON, R. - FIELD SURVEY FORM FOR CENTROMADIA PARRYI SSP. CONGDONII 1998-10-15
PRE98S0003	PRESTON, R. - PRESTON #1191 DAV #130140 (ALSO CITED IN PRE99R0001) 1998-10-15
PRE99R0001	PRESTON, R. - PRELIMINARY REPORT ON THE CONSERVATION STATUS OF CONGDON'S SPIKEWEED (HEMIZONIA PARRYI SSP. CONGDONII) IN THE SOUTH AND EAST SAN FRANCISCO BAY AREA AND MONTEREY COUNTY, CALIFORNIA. 1999-02-23

Map Index Number:	42342	**EO Index:**	42342
Key Quad:	Natividad (3612165)	**Element Code:**	PDAST4R0P1
Occurrence Number:	36	**Occurrence Last Updated:**	2000-02-08

Scientific Name:	*Centromadia parryi ssp. congdonii*		**Common Name:**	Congdon's tarplant
Listing Status:	**Federal:**	None	**Rare Plant Rank:**	1B.1
	State:	None	**Other Lists:**	BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden
CNDDB Element Ranks:	**Global:**	G3T1T2		
	State:	S1S2		

General Habitat:

VALLEY AND FOOTHILL GRASSLAND.

Micro Habitat:

ALKALINE SOILS, SOMETIMES DESCRIBED AS HEAVY WHITE CLAY. 0-245 M.

Last Date Observed:	1998-10-15	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	1998-10-15	**Occurrence Rank:**	Excellent
Owner/Manager:	PVT	**Trend:**	Stable
Presence:	Presumed Extant		

Location:

ALONG OLD STAGE ROAD NORTH OF JUNCTION WITH NATIVIDAD ROAD, NORTH OF NATIVIDAD AND NORTHEAST OF SALINAS.

Detailed Location:

IN FIELD WEST OF NATIVIDAD ROAD AT JUNCTION WITH OLD STAGE ROAD.

Ecological:

ANNUAL GRASLAND WITH LOLIUM MULTIFLORUM, LACTUCA SERRIOLA, RUMEX CRISPUS, HIRSCHFELDIA INCANA, AND POLYPOGON MONSPELIENSIS. SOILS MAPPED AS CHUALAR LOAM AND PLACENTIA SANDY LOAM.

Threats:

AGRICULTURAL LAND AND RURAL LANDS ARE ADJACENT TO THIS PARCEL.

General:

162,000 PLANTS OBSERVED IN 1998. THIS SITE IS 40 ACRES IN SIZE.

PLSS:	T14S, R03E, Sec. 02, E (M)	**Accuracy:**	specific area	**Area (acres):**	54
UTM:	Zone-10 N4067275 E624609	**Latitude/Longitude:**	36.74304 / -121.60424	**Elevation (feet):**	180

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

PRE98F0046	PRESTON, R. - FIELD SURVEY FORM FOR CENTROMADIA PARRYI SSP. CONGDONII 1998-10-15
PRE98S0002	PRESTON, R. - PRESTON #1190 CAS #969379 (ALSO CITED IN PRE99R0001) 1998-10-15
PRE99R0001	PRESTON, R. - PRELIMINARY REPORT ON THE CONSERVATION STATUS OF CONGDON'S SPIKEWEED (HEMIZONIA PARRYI SSP. CONGDONII) IN THE SOUTH AND EAST SAN FRANCISCO BAY AREA AND MONTEREY COUNTY, CALIFORNIA. 1999-02-23

Map Index Number: 42343
Key Quad: Natividad (3612165)
Occurrence Number: 37

EO Index: 42343
Element Code: PDAST4R0P1
Occurrence Last Updated: 2000-02-08

Scientific Name: *Centromadia parryi ssp. congdonii*

Listing Status: **Federal:** None
State: None

CNDDB Element Ranks: **Global:** G3T1T2
State: S1S2

Common Name: Congdon's tarplant

Rare Plant Rank: 1B.1

Other Lists: BLM_S-Sensitive
SB_RSABG-Rancho Santa Ana Botanic Garden

General Habitat:

VALLEY AND FOOTHILL GRASSLAND.

Micro Habitat:

ALKALINE SOILS, SOMETIMES DESCRIBED AS HEAVY WHITE CLAY. 0-245 M.

Last Date Observed: 1998-10-15
Last Survey Date: 1998-10-15
Owner/Manager: PVT
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Excellent
Trend: Stable

Location:

ALONG OLD STAGE ROAD SOUTHEAST OF JUNCTION WITH ZABALA ROAD, NNW OF CAMP MCCALLUM AND SOUTHEAST OF SALINAS.

Detailed Location:

ALONG AND EAST OF ROAD, FROM 0.2-0.9 MILE SE OF ZABALA ROAD.

Ecological:

ANNUAL GRASSLAND WITH LOLIUM MULTIFLORUM, RUMEX PULCHER, PHALARIS, AND HEMIZONIA. SOILS MAPPED AS GLORIA SANDY LOAM.

Threats:

SITE IS GRAZED, BUT GRAZING DOES NOT APPEAR TO BE A THREAT. PERIMETER IS DISKED FOR FIRE PROTECTION.

General:

178,000 PLANTS OBSERVED IN 1998.

PLSS: T15S, R04E, Sec. 04, W (M)
UTM: Zone-10 N4058088 E630250

Accuracy: specific area
Latitude/Longitude: 36.65949 / -121.54264

Area (acres): 121
Elevation (feet): 120

County Summary:

Monterey

Quad Summary:

Natividad (3612165)

Sources:

PRE98F0048	PRESTON, R. - FIELD SURVEY FORM FOR CENTROMADIA PARRYI SSP. CONGDONII 1998-10-15
PRE98S0004	PRESTON, R. - PRESTON #1195 JEPS #95218, DAV (ALSO CITED IN PRE99R0001) 1998-10-15
PRE99R0001	PRESTON, R. - PRELIMINARY REPORT ON THE CONSERVATION STATUS OF CONGDON'S SPIKEWEED (HEMIZONIA PARRYI SSP. CONGDONII) IN THE SOUTH AND EAST SAN FRANCISCO BAY AREA AND MONTEREY COUNTY, CALIFORNIA. 1999-02-23

Map Index Number: 49152
Key Quad: Natividad (3612165)
Occurrence Number: 58

EO Index: 49152
Element Code: PDAST4R0P1
Occurrence Last Updated: 2002-10-28

Scientific Name: *Centromadia parryi ssp. congdonii*

Common Name: Congdon's tarplant

Listing Status: **Federal:** None
State: None

CNDDB Element Ranks: **Global:** G3T1T2
State: S1S2

Rare Plant Rank: 1B.1

Other Lists: BLM_S-Sensitive
SB_RSABG-Rancho Santa Ana Botanic Garden

General Habitat:

VALLEY AND FOOTHILL GRASSLAND.

Micro Habitat:

ALKALINE SOILS, SOMETIMES DESCRIBED AS HEAVY WHITE CLAY. 0-245 M.

Last Date Observed: 2002-07-27
Last Survey Date: 2002-07-27
Owner/Manager: CITY OF SALINAS
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Poor
Trend: Unknown

Location:

EAST OF EAST LAUREL DRIVE AND ALONG THE NATIVIDAD CREEK/CANAL, SALINAS.

Detailed Location:

PLANTS OCCURING ON TRAILS, INACTIVE ROAD, AND OTHER DISTURBED AREAS.

Ecological:

PLANT COMMUNITY IS DISTURBED NON-NATIVE GRASSLAND. ASSOCIATES: BROMUS DIANDRUS, AVENA SPP., PICRIS ECHIOIDES, PLANTAGO LANCEOLATA, AND CARDARIA DRABA.

Threats:

ORV USE, ILLEGAL DUMPING, AND EXTENSIVE FOOT TRAFFIC. PROPOSED PARK DEVELOPMENT WILL IMPACT SITE.

General:

88 PLANTS OBSERVED IN 2002. PROPOSED PARK DEVELOPMENT WILL IMPACT EXISTING POPULATION, BUT MAY PROVIDE OPPORTUNITIES FOR ON-SITE RESTORATION OF SPECIES.

PLSS: T14S, R03E, Sec. 27, NE (M)
Accuracy: 1/10 mile
Area (acres): 0

UTM: Zone-10 N4061402 E623055
Latitude/Longitude: 36.69031 / -121.62259
Elevation (feet): 40

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

GIL02F0002	GILCHRIST, J. - FIELD SURVEY FORM FOR CENTROMADIA PARRYI SSP. CONGDONII 2002-07-27

Map Index Number:	83618	**EO Index:**	84647
Key Quad:	Natividad (3612165)	**Element Code:**	PDAST4R0P1
Occurrence Number:	86	**Occurrence Last Updated:**	2011-08-29

Scientific Name: *Centromadia parryi ssp. congdonii*

Common Name: Congdon's tarplant

Listing Status: **Federal:** None

State: None

Rare Plant Rank: 1B.1

Other Lists: BLM_S-Sensitive
SB_RSABG-Rancho Santa Ana Botanic Garden

CNDDB Element Ranks: **Global:** G3T1T2

State: S1S2

General Habitat:

VALLEY AND FOOTHILL GRASSLAND.

Micro Habitat:

ALKALINE SOILS, SOMETIMES DESCRIBED AS HEAVY WHITE CLAY. 0-245 M.

Last Date Observed:	1992-09-04	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	1992-09-04	**Occurrence Rank:**	Unknown
Owner/Manager:	UNKNOWN	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

JUNCTION OF E BORONDA ROAD AND CONSTITUTION BLVD, EAST OF SALINAS.

Detailed Location:

MAPPED BY CNDDB AS BEST GUESS AT THE JUNCTION OF E BORONDA ROAD AND CONSTITUTION BLVD. YADON COLLECTION LABEL STATES "SALINAS BORONDA RD & CONSTITUTION."

Ecological:

ALLUVIUM.

Threats:

General:

ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1992 YADON COLLECTION. NEEDS FIELDWORK.

PLSS:	T14S, R03E, Sec. 23 (M)	**Accuracy:**	2/5 mile	**Area (acres):**	0
UTM:	Zone-10 N4062980 E624757	**Latitude/Longitude:**	36.70431 / -121.60328	**Elevation (feet):**	80

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165)

Sources:

YAD92S0010	YADON, V. - YADON SN PGM #4533 1992-09-04

Map Index Number: 24658
Key Quad: Salinas (3612166)
Occurrence Number: 1

EO Index: 6914
Element Code: PDFAB0F8R1
Occurrence Last Updated: 2013-07-02

Scientific Name: *Astragalus tener var. tener*

Common Name: alkali milk-vetch

Listing Status: **Federal:** None
State: None

CNDDB Element Ranks: **Global:** G2T1
State: S1

Rare Plant Rank: 1B.2
Other Lists:

General Habitat:

ALKALI PLAYA, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.

Micro Habitat:

LOW GROUND, ALKALI FLATS, AND FLOODED LANDS; IN ANNUAL GRASSLAND OR IN PLAYAS OR VERNAL POOLS. 0-170 M.

Last Date Observed: 1889-04-XX
Last Survey Date: 1889-04-XX
Owner/Manager: UNKNOWN
Presence: Possibly Extirpated

Occurrence Type: Natural/Native occurrence
Occurrence Rank: None
Trend: Unknown

Location:

1-2 MILES NORTHEAST OF SALINAS.

Detailed Location:

EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB AROUND 1 TO 2 AIR MILES NORTHEAST OF SALINAS BASED ON AN 1882 COLLECTION FROM "2 MI NE FROM SALINAS" AND AN 1889 COLLECTION FROM "SALINAS, 1 MI NE."

Ecological:

GROWING IN LOW GROUNDS.

Threats:

DEVELOPMENT, AGRICULTURE?

General:

BASED ON 1882 AND 1889 COLLECTIONS BY ABBOTT. WITHAM REVIEWED MAPS AND SPOT IMAGERY FOR THIS VICINITY IN 2002 & FOUND AREA ALL DEVELOPED AND/OR EXTENSIVE ROW CROP AGRICULTURE. PROBABLY EXTIRPATED.

PLSS: T14S, R03E, Sec. 21 (M)
Accuracy: 1 mile
Area (acres): 0
UTM: Zone-10 N4062118 E621790
Latitude/Longitude: 36.69692 / -121.63663
Elevation (feet): 60

County Summary:

Monterey

Quad Summary:

Natividad (3612165), Salinas (3612166)

Sources:

ABB82S0001	ABBOTT, E. - ABBOTT SN CAS #63065 1882-XX-XX
ABB89S0005	ABBOTT, E. - ABBOTT SN UNKNOWN HERBARIUM (CITED IN LIS88U0001) 1889-04-XX
LIS88U0001	LISTON, A. - LIST OF ASTRAGALUS TENER VAR. TENER COLLECTIONS. 1988-11-17
WIT02R0001	WITHAM, C. - ALKALINE VERNAL POOL MILK-VETCH STATUS SURVEY REPORT 2002-09-11

Map Index Number:	11116	**EO Index:**	20999
Key Quad:	San Juan Bautista (3612175)	**Element Code:**	PDPGN08470
Occurrence Number:	16	**Occurrence Last Updated:**	2018-10-03

Scientific Name: *Eriogonum nortonii*

Common Name: Pinnacles buckwheat

Listing Status:	**Federal:**	None	**Rare Plant Rank:**	1B.3
	State:	None	**Other Lists:**	
CNDDB Element Ranks:	**Global:**	G2		
	State:	S2		

General Habitat:

CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.

Micro Habitat:

SANDY SOILS; OFTEN ON RECENT BURNS; WESTERN SANTA LUCIAS. 90-975 M.

Last Date Observed:	1975-06-09	**Occurrence Type:**	Natural/Native occurrence
Last Survey Date:	1975-06-09	**Occurrence Rank:**	Unknown
Owner/Manager:	PVT	**Trend:**	Unknown
Presence:	Presumed Extant		

Location:

WEST SLOPE OF FREMONT PEAK, GABILAN RANGE.

Detailed Location:

GROWING IN ROADWAY. EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB IN THE VICINITY OF FREMONT PEAK.

Ecological:

IN DECOMPOSED GRANITE.

Threats:

General:

SITE BASED ON A 1966 STEPHENSON COLLECTION FROM "WEST SLOPE OF FREMONT PEAK" AND 1975 YADON COLLECTION FROM "FREMONT PEAK W SIDE, IN ROADWAY JAMES BARDIN RANCH PRIVATE ROAD." NEEDS FIELDWORK.

PLSS:	T13S, R04E, Sec. 35 (M)	**Accuracy:**	1 mile	**Area (acres):**	0
UTM:	Zone-10 N4069003 E633127	**Latitude/Longitude:**	36.75745 / -121.50855	**Elevation (feet):**	

County Summary:	**Quad Summary:**
Monterey, San Benito	Mt. Harlan (3612164), Natividad (3612165), Hollister (3612174), San Juan Bautista (3612175)

Sources:

STE66S0003	STEPHENSON, T. - STEPHENSON SN CAS #462327, CAS-BOT-BC #175229 1966-05-21
YAD75S0002	YADON, V. - YADON SN PGM #1400 1975-06-09

Map Index Number: 68765

EO Index: 69250

Key Quad: Prunedale (3612176)

Element Code: PMLIL0V0C0

Occurrence Number: 64

Occurrence Last Updated: 2007-03-30

Scientific Name: *Fritillaria liliacea*

Common Name: fragrant fritillary

Listing Status: **Federal:** None

State: None

Rare Plant Rank: 1B.2

Other Lists: USFS_S-Sensitive

CNDDB Element Ranks: **Global:** G2

State: S2

General Habitat:

COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND, COASTAL PRAIRIE, CISMONTANE WOODLAND.

Micro Habitat:

OFTEN ON SERPENTINE; VARIOUS SOILS REPORTED THOUGH USUALLY ON CLAY, IN GRASSLAND. 3-385 M.

Last Date Observed: 2002-06-XX

Occurrence Type: Natural/Native occurrence

Last Survey Date: 2002-06-XX

Occurrence Rank: Unknown

Owner/Manager: UNKNOWN

Trend: Unknown

Presence: Presumed Extant

Location:

RANCHO SAN JUAN AREA, ABOUT 2 AIR MILES SE OF PRUNEDALE.

Detailed Location:

"...DISTRIBUTED OVER APPROXIMATELY 3 ACRES...IN THE CENTRAL PORTION OF THE [RANCH SAN JUAN] SPECIFIC PLAN AREA." EXACT LOCATION OF RANCHO SAN JUAN UNKNOWN. MAPPED AS BEST GUESS BY CNDDB ACCORDING TO THE "VICINITY MAP" OF THE PLAN.

Ecological:

MIXED NATIVE/NON-NATIVE GRASSLAND.

Threats:

General:

FEWER THAN 20 PLANTS WERE OBSERVED IN 1998, AND AGAIN IN APRIL AND JUNE OF 2002. NEEDS FIELDWORK TO DETERMINE EXACT LOCATION.

PLSS: T13S, R03E, Sec. 34 (M)

Accuracy: 1 mile

Area (acres): 0

UTM: Zone-10 N4068933 E621935

Latitude/Longitude: 36.75832 / -121.63391

Elevation (feet):

County Summary:	**Quad Summary:**
Monterey	Natividad (3612165), Salinas (3612166), San Juan Bautista (3612175), Prunedale (3612176)

Sources:

TAY05U0004	TAYLOR, D. - EMAIL FROM DEAN TAYLOR RE: NEW OCCURRENCE REPORTED IN RANCHO SAN JUAN SPECIFIC PLAN EIR. 2005-01-07

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Monterey County, California

Local office

Ventura Fish And Wildlife Office

☎ (805) 644-1766
📠 (805) 644-3958

2493 Portola Road, Suite B
Ventura, CA 93003-7726

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS

California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo Vireo bellii pusillus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher Empidonax traillii extimus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Santa Cruz Long-toed Salamander Ambystoma macrodactylum croceum There is **proposed** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7405	Endangered

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS

Marsh Sandwort *Arenaria paludicola* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2229	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Long-billed Curlew Numenius americanus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5511	Breeds elsewhere
Nuttall's Woodpecker Picoides nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Oak Titmouse Baeolophus inornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Song Sparrow Melospiza melodia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 20 to Sep 5
Spotted Towhee Pipilo maculatus clementae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/4243	Breeds Apr 15 to Jul 20
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (🟩)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (🟨)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

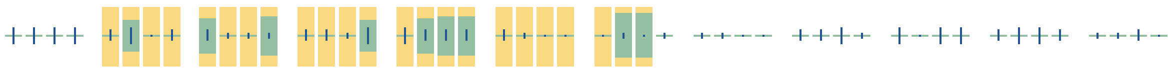
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

🟩 probability of presence 🟨 breeding season | survey effort – no data

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

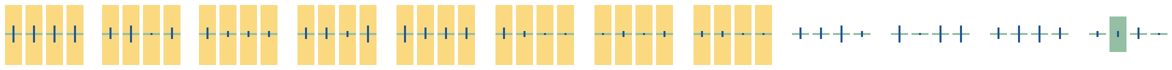
Allen's Hummingbird

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



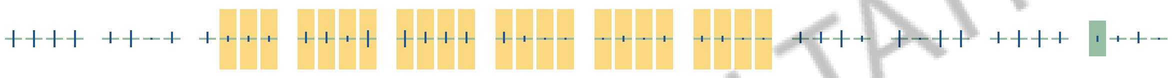
Bald Eagle

Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



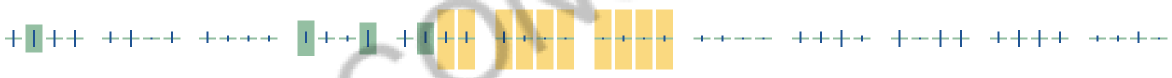
Burrowing Owl

BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



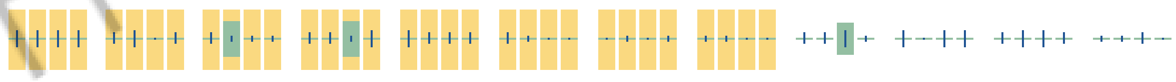
Common Yellowthroat

BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



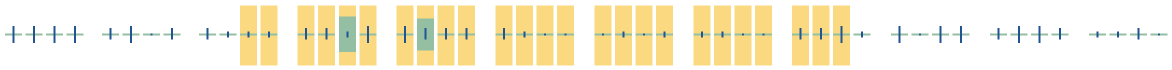
Golden Eagle

Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



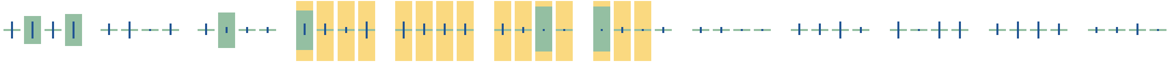
Lawrence's Goldfinch

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

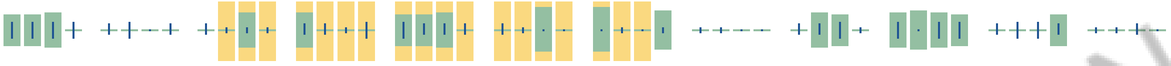


Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

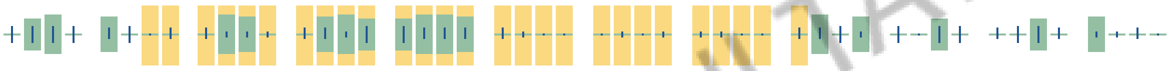
Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



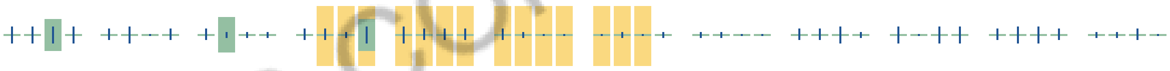
Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



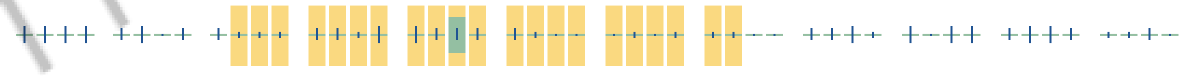
Song Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

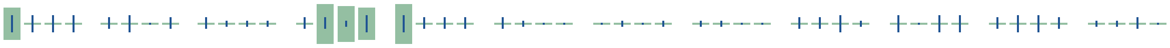


Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

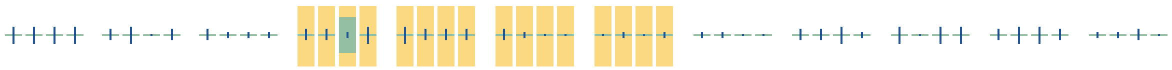


SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Yellow-billed Magpie
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix C

Cultural Resources Reports:

California Historical Resources
Information System Records Search

Native American Heritage Commission
Sacred Lands File Search

Comment Letter from
Ohlone/Costanoan-Esselen Nation

CALIFORNIA
HISTORICAL
RESOURCES
INFORMATION
SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

November 6, 2017 NWIC File No.: 17-1168

Nicole Hoke
ODELL Planning & Research, Inc.
49346 Road 426, Suite 2
Oakhurst, CA 93644

Re: Record search results for the proposed Buckhorn Preschool Project, at Buckhorn and Falcon Drives, APN 153-641-024, Salinas, CA.

Project Description: the construction and operation of a new elementary school.

Dear Ms. Nicole Hoke:

Per your request received by our office on October 13, 2017, a records search was conducted for the above referenced project by reviewing pertinent Northwest Information Center (NWIC) base maps that reference cultural resources records and reports, historic-period maps, and literature for Monterey County. Please note that use of the term cultural resources includes both archaeological resources and historical buildings and/or structures.

Review of this information indicates that there has been one cultural resource study that includes 100% of the Buckhorn Preschool project area (Hampson et al 1986: S-8021). This project area contains no recorded archaeological resources. The State Office of Historic Preservation Historic Property Directory (OHP HPD) (which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places) lists no recorded buildings or structures in or adjacent to the proposed project area. In addition to these inventories, the NWIC base maps show no recorded buildings or structures within the proposed project area.

At the time of Euroamerican contact the Native Americans that lived in the area were speakers of the Mutsun language, part of the Costanoan language family (Levy 1978:485). There are no Native American resources in or adjacent to the proposed project area referenced in the ethnographic literature.

Based on an evaluation of the environmental setting and features associated with known sites, Native American resources in this part of Monterey County have been found on the banks and terraces near seasonal and perennial waterways, in the interface between the foothills and low-lying terrain, and near associated marshes and wetlands. The Buckhorn Preschool project area is located within an alluvial fan approximately 2/3 mile south of the nearest watercourse, Natividad Creek. Given the dissimilarity of one or more of these environmental factors, there is a low potential for unrecorded Native American resources in the proposed Buckhorn Preschool project area.

Review of historical literature and maps gave no indication of the possibility of historic-period activity within the Buckhorn Preschool project area (1858 Rancho maps, 1912 and 1940 Salinas USGS 15-minute topographic quadrangle maps). With this in mind, there is a low potential for unrecorded historic-period archaeological resources in the proposed Buckhorn Preschool project area.

The 1947 Natividad USGS 7.5-minute topographic quadrangle fails to depict any buildings or structures within the Buckhorn Preschool project area; therefore, there is a low possibility of identifying any buildings or structures 45 years or older within the project area.

RECOMMENDATIONS:

1) There is a low possibility of identifying Native American and historic-period archaeological resources and further study is not recommended at this time.

2) We recommend the lead agency contact the local Native American tribe(s) regarding traditional, cultural, and religious heritage values. For a complete listing of tribes in the vicinity of the project, please contact the Native American Heritage Commission at 916/373-3710.

3) If the proposed project area contains buildings or structures that meet the minimum age requirement, prior to commencement of project activities, it is recommended that this resource be assessed by a professional familiar with the architecture and history of Monterey County. Please refer to the list of consultants who meet the Secretary of Interior’s Standards at http://www.chrisinfo.org.

4) Review for possible historic-period buildings or structures has included only those sources listed in the attached bibliography and should not be considered comprehensive.

5) If archaeological resources are encountered **during construction,** work should be temporarily halted in the vicinity of the discovered materials and workers should avoid altering the materials and their context until a qualified professional archaeologist has evaluated the situation and provided appropriate recommendations. Project personnel should not collect cultural resources. Native American resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic-period resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

6) It is recommended that any identified cultural resources be recorded on DPR 523 historic resource recordation forms, available online from the Office of Historic Preservation's website: http://ohp.parks.ca.gov/default.asp?page_id=1069

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the California Historical Resources Information System (CHRIS) Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation

Officer in carrying out the OHP’s regulatory authority under federal and state law.

Thank you for using our services. Please contact this office if you have any questions, (707) 588-8455.

Sincerely,
Jillian Guldenbrein

Jillian Guldenbrein
Researcher

LITERATURE REVIEWED

In addition to archaeological maps and site records on file at the Northwest Information Center of the Historical Resources Information System, California Archaeological Inventory, the following literature was reviewed:

Barrows, Henry D., and Luther A. Ingersoll
2005 *Memorial and Biographical History of the Coast Counties of Central California*. Three Rocks Research, Santa Cruz, CA (Digital Reproduction of The Lewis Publishing Company, Chicago, IL: 1893.)

Breschini, Gary S., Trudy Haversat, and Mona Gudgel
2000 *10,000 Years on the Salinas Plain, An Illustrated History of Salinas City, California.* Heritage Media Corp., Carlsbad, CA.

Clark, Donald Thomas
1991 *Monterey County Place Names: A Geographical Dictionary*. Kestrel Press, Carmel Valley, CA.

Gudde, Erwin G.
1969 *California Place Names: The Origin and Etymology of Current Geographical Names*. Third Edition. University of California Press, Berkeley and Los Angeles.

Hampson, R. Paul, Mary Ellen Ryan, Gary S. Breschini, and Trudy Haversat (Archaeological Consulting)
1986 *Preliminary Archaeological Reconnaissance and Historical Overview of the Williams Ranch, El Sausal Rancho, Monterey County, California.* **NWIC Report S-008021**

Hoover, Mildred Brooke, Hero Eugene Rensch, and Ethel Rensch, revised by William N. Abeloe
1966 *Historic Spots in California*. Third Edition. Stanford University Press, Stanford, CA.

Hoover, Mildred Brooke, Hero Eugene Rensch, and Ethel Rensch, William N. Abeloe, revised by Douglas E. Kyle
1990 *Historic Spots in California*. Fourth Edition. Stanford University Press, Stanford, CA.

Howard, Donald M., Esq.
1979 *Prehistoric Sites Handbook: Monterey & San Luis Obispo Counties*. Angel Press, Monterey, CA.

Kroeber, A.L.
1925 *Handbook of the Indians of California*. Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C. (Reprint by Dover Publications, Inc., New York, 1976)

Levy, Richard
1978 Costanoan. In *California*, edited by Robert F. Heizer, pp. 485-495. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Monterey County Historical Society, Inc.
n.d. List of Surveyed Sites for Salinas Historic Survey. Monterey County Historical Society, Inc., Salinas, CA.

Myers, William A. (editor)
1977 *Historic Civil Engineering Landmarks of San Francisco and Northern California*. Prepared by The History and Heritage Committee, San Francisco Section, American Society of Civil Engineers. Pacific Gas and Electric Company, San Francisco, CA.

Roberts, George, and Jan Roberts
1988 *Discover Historic California*. Gem Guides Book Co., Pico Rivera, CA.

Ryan, Nicki
1981 Historic Resources in Monterey County.

State of California Department of Parks and Recreation
1976 *California Inventory of Historic Resources*. State of California Department of Parks and Recreation, Sacramento.

State of California Department of Parks and Recreation and Office of Historic Preservation
1988 *Five Views: An Ethnic Sites Survey for California*. State of California Department of Parks and Recreation and Office of Historic Preservation, Sacramento.

State of California Office of Historic Preservation **
2012 *Historic Properties Directory*. Listing by City (through April 2012). State of California Office of Historic Preservation, Sacramento.

Williams, James C.
1997 *Energy and the Making of Modern California*. The University of Akron Press, Akron, OH.

Woodbridge, Sally B.
1988 *California Architecture: Historic American Buildings Survey*. Chronicle Books, San Francisco, CA.

Works Progress Administration
1984 The WPA Guide to California. Reprint by Pantheon Books, New York. (Originally published as California: A Guide to the Golden State in 1939 by Books, Inc., distributed by Hastings House Publishers, NY.)

******Note that the Office of Historic Preservation's *Historic Properties Directory* includes National Register, State Registered Landmarks, California Points of Historical Interest, and the California Register of Historical Resources as well as Certified Local Government surveys that have undergone Section 106 review.

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

October 10, 2017

Nicole Hoke
Odell Planning and Research

Email to: Nicole@odellplanning.com

RE: Buckhorn Preschool Project, Monterey County

Dear Ms. Hoke,

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not preclude the presence of cultural resources in any project area. Other sources for cultural resources should also be contacted for information regarding known and/or recorded sites.

Enclosed is a list of Native Americans tribes who may have knowledge of cultural resources in the project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these tribes, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at frank.lienert@nahc.ca.gov.

Sincerely,

Frank Lienert
Associate Governmental Program Analyst

Native American Heritage Commission
Native American Contacts
10/10/2017

Esselen Tribe of Monterey County
Tom Little Bear Nason
38655 Tassaiara Road — Esselen
Carmel Valley , CA 93924 — Ohlone
(408) 659-2153

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 — Ohlone/Costanoan
Hollister , CA 95024
ams@indiancanyon.org
(831) 637-4238

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street — Ohlone/Costanoan
Pomona , CA 91766
rumsen@aol.com
(909) 524-8041 Cell
(909) 629-6081

Ohlone/Coastanoan-Esselen Nation
Louise Miranda-Ramirez, Chairperson
P.O. Box 1301 — Esselen
Monterey , CA 93942 — Ohlone/Costanoan
ramirez.louise@yahoo.com
(408) 629-5189
408-661-2486 Cell

Amah MutsunTribal Band
Valentin Lopez, Chairperson
P.O. Box 5272 — Ohlone/Costanoan
Galt , CA 95632 — Northern Valley Yokuts
vlopez@amahmutsun.org
(916) 743-5833

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road — Ohlone/Costanoan
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 851-7489 Cell
(650) 851-7747 Office
(650) 332-1526 Fax

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessments for the proposed Buckhorn Preschool Project, Monterey County

Ohlone/Costanoan-Esselen Nation

OHLONE COSTANOAN
ESSELEN NATION

Previously acknowledged as
The San Carlos Band of
Mission Indians
The Monterey Band
And also known as
O.C.E.N. or Esselen Nation
P.O. Box 1301
Monterey, CA 93942

www.ohlonecostanoanesselennation.org.

October 19, 2017

Re: Buckhorn Preschool Project

Saleki Atsa,

Ohlone/Costanoan-Esselen Nation is an historically documented previously recognized tribe. OCEN is the legal tribal government representative for over 600 enrolled members of Esselen, Carmeleno, Monterey Band, Rumsen, Chalon, Soledad Mission, San Carlos Mission and/or Costanoan Mission Indian descent of Monterey County. Though other indigenous people may have lived in the area, the area is the indigenous homeland of our people. Included with this letter please find a territorial map by Taylor 1856; Levy 1973; and Milliken 1990, indentifying Tribal areas.

Ohlone/Costanoan-Esselen Nation objects to all excavation in known cultural lands, even when they are described as previously disturbed, and of no significant archaeological value. Please be advised that it is our first priority that our ancestor's remains be protected and undisturbed. We desire that all sacred burial items be left with our ancestors on site or as culturally determined by OCEN. All cultural items returned to Ohlone/Costanoan-Esselen Nation. We ask for the respect that is afforded all of our current day deceased, by no other word these burial sites are cemeteries, respect for our ancestors as you would expect respect for your deceased family members in today's cemeteries. **Our definition of respect is no disturbance.**

OCEN's Tribal leadership desires to be provided with archaeological reports/surveys, including subsurface testing, and presence/absence testing. OCEN request to be included in mitigation and recovery programs, reburial of any of our ancestral remains, placement of all cultural items, and that a Native American Monitor of Ohlone/Costanoan-Esselen Nation, approved by the OCEN Tribal Council be used within our aboriginal territory.

OCEN **requests consultation on all projects affecting our aboriginal homelands, which include all ground disturbance** (not limited to ground disturbance). It is our request to consult on projects to establish a procedure, 1. provide OCEN with all reports, 2. establish procedure for disturbance of unknown sites, 3. procedure for known sites, etc.

We ask that a sacred lands search with the Northwest Information Center, Sonoma State University and the Native American Heritage Commission. Please feel free to contact me at (408) 629-5189. Nimasianexelpasaleki. Thank you

Sincerely and Respectfully Yours,

Louise J. Miranda Ramirez, Chairperson
Ohlone/Costanoan-Esselen Nation
(408) 629-5189

Cc: OCEN Tribal Council

Alisal Union School District

REQUEST FOR PRELIMINARY COMMENT

Buckhorn Preschool Project

To:

Responsible, Trustee and Interested Agencies
Interested Persons

From:

Alisal Union School District
Jim Koenig, Associate Superintendent
Business Services and Operations
1205 E Market Street
Salinas, CA 93905

Telephone: (831) 753-5700
Email: jim.koenig@alisal.org

Date: September 22, 2017

Purpose: The Alisal Union School District (District) is proposing to undertake the Buckhorn Preschool Project (project). The purpose of this Request for Preliminary Comment is to invite responsible, trustee and interested agencies, as well as interested persons, to submit written comments on any concerns they may have on the environmental effects of the project. The District will consider the comments in preparing a California Environmental Quality Act Initial Study for the project and in determining whether to prepare an Environmental Impact Report for the project or to adopt a Negative Declaration or Mitigated Negative Declaration. You will have the opportunity to comment again after you have reviewed the completed environmental documents.

Comments: Please send any comments in response to this Request for Preliminary Comment to Jim Koenig at the address shown above. **The deadline for submission of comments is October 23, 2017.**

Project Location and Description: The Buckhorn Preschool Project (Project) is proposed for the northeast corner of Buckhorn Drive and Falcon Drive in the City of Salinas. The Project includes the acquisition of an 0.8-acre parcel from the City of Salinas and the construction of a two-story building housing eight classrooms, a 20-stall parking lot, and a playground. The school will be designed to accommodate up to 200 preschool children and employ 18-24 staff and faculty members.

ODELL Planning & Research, Inc.
Environmental Planning • School Facility Planning • Demographics

September 20, 2017

Louise J. Miranda Ramirez, Tribal Chairperson
Ohlone/Coastanoan-Esselen Nation
P.O. Box 1301
Monterey, CA 93942

RE: Request for Preliminary Comment – Buckhorn Preschool Project

Dear Ms. Ramirez:

Please find enclosed the Request for Preliminary Comment for the Buckhorn Preschool Project, which includes project information and maps.

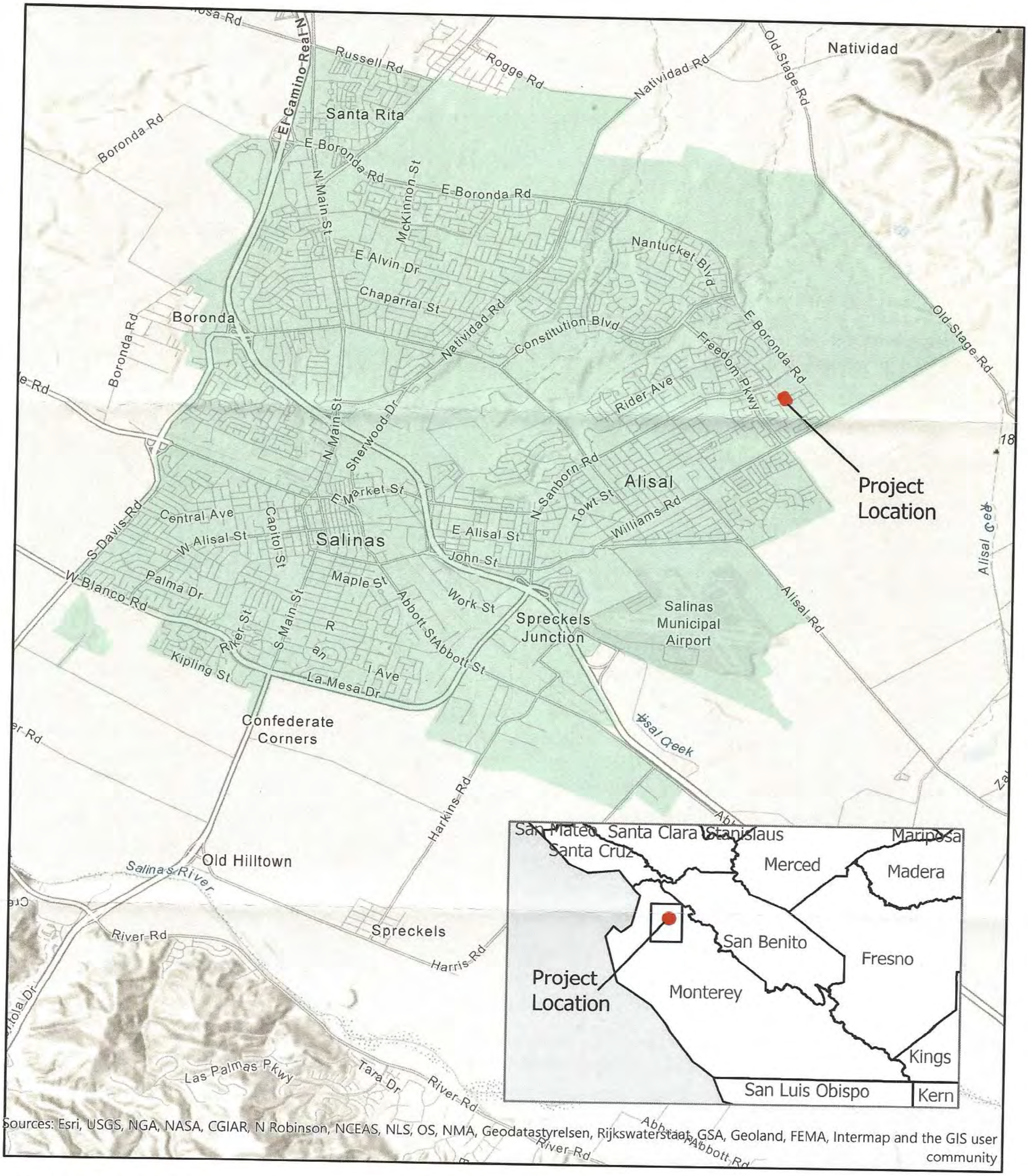
This letter constitutes your formal notification of this project in accordance with California Public Resources Code section 21080.3.1(d), which provides for 30 days from receipt of this notification to request consultation with respect to tribal cultural resources.

Please address any correspondence on this project to Jim Koenig, Associate Superintendent, Business Services and Operations at the address listed on the enclosed Request for Preliminary Comment.

Sincerely,

Nicole Hoke
Associate Planner
nicole@odellplanning.com

Enclosure



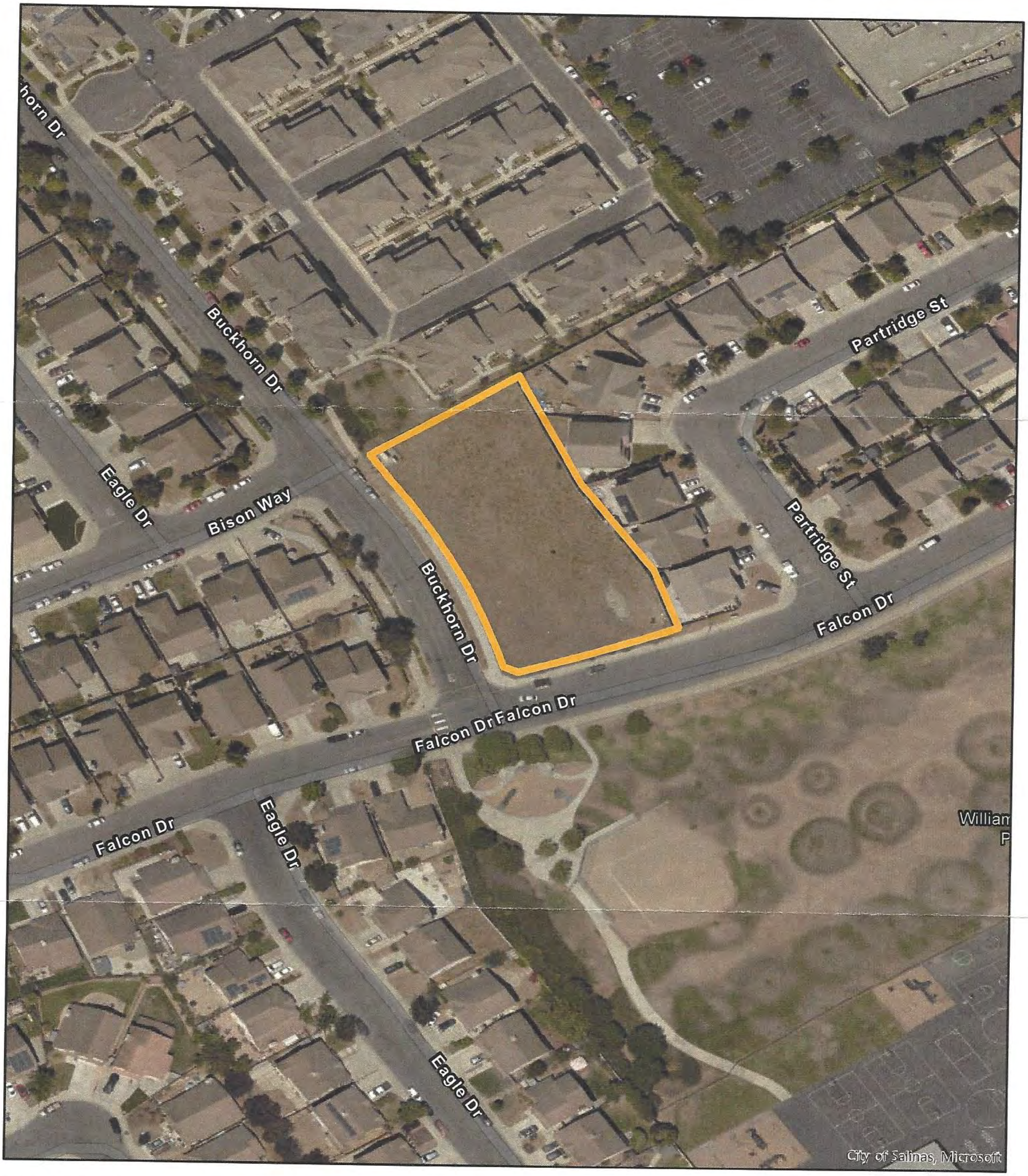
Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

Project Location

Figure 1

Buckhorn Preschool Project
Alisal Union School District

ODELL Planning & Research, Inc.
Environmental Planning • School Facility Planning • Demographics



Project Site

Figure 2

Buckhorn Preschool Project
Alisal Union School District

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Environmental Planning • School Facility Planning • Demographics

Appendix D

Geologic Hazards Evaluation

padre associates, inc.
ENGINEERS, GEOLOGISTS &
ENVIRONMENTAL SCIENTISTS

GEOLOGIC HAZARDS EVALUATION
NEW DAYCARE CENTER
1081 BUCKHORN DRIVE
SALINAS, MONTEREY COUNTY, CALIFORNIA

Prepared for:
ALISAL UNION SCHOOL DISTRICT

SEPTEMBER 2017

padre
associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

September 14, 2017
Project No. 1701-2041

Mr. Jim Koenig
Assistant Superintendent Business Services
Alisal Union School District
1275 East Market Street
Salinas, California 93905

Subject: Geologic Hazards Evaluation for a New Daycare Center
1081 Buckhorn Drive, Salinas, Monterey County, California

Dear Mr. Koenig:

Padre Associates, Inc. (Padre), on behalf of the Alisal Union School District, has prepared this geologic hazards evaluation for a proposed new daycare center facility located at 1081 Buckhorn Drive in Salinas, Monterey County, California (Project Site).

This document has been prepared in general accordance with California Education Code §17212 and California Geological Survey Note 48 and Special Publication 117.

The report summarizes the data that was collected and reviewed for the study at the Project Site. Please contact the undersigned at (916) 333-5920 x25, if you have any questions or require additional information.

Sincerely,
PADRE ASSOCIATES, INC.

Alan Churchill, P.G.
Project Geologist

ALAN CHURCHILL
No. 9378
Exp. 6-30-19

JEROME K. SUMMERLIN
EG NO. 1950
CERTIFIED
ENGINEERING
GEOLOGIST

Jerome K. Summerlin, C.E.G., C.Hg.
Principal Geologist

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INTRODUCTION

This geologic hazards report has been prepared by Padre Associates, Inc. (Padre), on behalf of the Alisal Union School District (District), for a proposed new daycare center located at 1081 Buckhorn Drive in Salinas, Monterey County, California (Project Site). Refer to **Plate 1 - Site Location** and **Plate 2 - Site Plan**.

This document has been prepared in general accordance with California Education Code §17212, California Geological Survey Note 48 and Special Publication 117.

PROJECT LOCATION

The Project Site is located in Section 25, Township 14 South, Range 03 East, of the Natividad Quadrangle, California USGS 7½-Minute Series, Topographic Map. Approximate latitude and longitude near the center of the Project Site are identified to be:

• Latitude (North)	36° 41’ 28.91” W (36.6913)
• Longitude (West)	121° 35’ 47.66” N (-121.5965)

The Project Site consists of an undeveloped parcel of land totaling approximately 0.8 acres, which is located at the northeast intersection of Buckhorn Drive and Falcon Drive in Salinas, Monterey County, California. The Project Site is identified by the Monterey County Assessor’s Office as Assessor’s Parcel Number (APN) 153-641-024 (0.80 acres), and is zoned by the City of Salinas as PS (Public/Semipublic). A copy of the Assessor’s Parcel Map is presented in **Appendix A**.

SITE CONDITIONS

Site Usage

According to a review of available historical aerial photographs, the Project Site appears to have been used for agricultural purposes since at least 1937 until the early to mid-1990s. In a 1998 historical aerial photograph, the Project Site appears to have been rough graded, is undeveloped, and is included as part of a larger residential development. Currently, the Project Site consists of a vacant parcel of land primarily surrounded by residential properties. The Project Site has been owned by the City of Salinas since 2006. Photographs taken during the course of Padre’s site reconnaissance activities conducted on August 25, 2017 are presented in **Appendix B**.

The Project Site is bordered to the north by a residential apartment complex, and a storm water detention basin, beyond which is a commercial shopping center; to the east by a residential development; to the south by Falcon Drive, beyond which is a public park and an elementary school; and to the west by Buckhorn Drive, beyond which are residential developments.

Topography

Based on a review of the USGS 7.5-minute series topographic map, Natividad Quadrangle, California (photorevised 1984), the Project Site lies at an approximate elevation of 140 feet above mean sea level (msl). The Project Site is gently sloped towards the adjacent streets, and the general topographic gradient in the vicinity of the Project Site is towards the southwest. Natividad Creek is located approximately 0.75 miles to the northwest and Alisal Creek is located approximately 1.5 miles to the east of the Project Site.

GEOLOGIC CONDITIONS

Regional Geology

The Project Site is located within the Coast Ranges geomorphic province of California. The Coast Ranges stretch approximately 600 miles from the Oregon border to the Santa Ynez River and fall into two sub-provinces: the ranges north of San Francisco Bay and those from the San Francisco Bay south to Santa Barbara County. The northern ranges lie east of the San Andreas Fault Zone, whereas most of the southern ranges are to the west. The province contains many elongate ranges and narrow valleys that are approximately parallel to the coast, although the coast usually shows a somewhat more northerly trend than do the ridges and valleys. Therefore, some valleys intersect the shore at acute angles and some mountains terminate abruptly at the sea (Norris and Webb, 1990).

Geologic Structure

The dominant characteristic of the Coast Ranges is its division into elongate topographic and lithographic strips underlain by discrete basement rocks that are separated by profound structural discontinuities. The pattern extends east, and probably also west onto the sea floor. On the east, concealed beneath the Central Valley, is the enigmatic boundary between the Sierra Nevada basement and the Coast Range Franciscan. Most of the boundary between the Sierran and Franciscan basement lies beneath several thousand feet of late Mesozoic and Cenozoic sedimentary rocks in the Salinas Valley. North of the city of Red Bluff, the boundary emerges as the South Fork Mountain Thrust, separating the Klamath Mountains from the Coast Ranges. Westward, the next major boundary is the San Andreas Fault Zone, which separates Franciscan basement from the granitic-metamorphic basement of the Salinian Block. South of Monterey, the Sur-Nacimiento Fault Zone separates Salinian rocks from more Franciscan basement to the southwest. Another boundary should occur farther west, offshore, where Franciscan basement is replaced by normal oceanic crust.

Site Geology

The Project Site lies within the Salinas Valley and is bounded by the Santa Lucia Range on the southwest and the Gabilan Range on the northeast. According to the *Geologic Map of the Natividad Quadrangle, Monterey County, California*, (Dibblee, 2007), the Project Site is underlain by dissected older alluvium. The surficial geology of the Project Site and surrounding areas is shown on **Plate 3** - Geologic Map.

Soils

According to the United States Department of Agriculture, Soil Conservation Service's, Soil Survey of Monterey County, California dated April 1978; surficial soil at the Project Site consists of Chualar loam (0 to 2 percent slopes).

The Chualar loam consists of well-drained soil that formed in alluvium derived from granitic and schistose rocks on alluvial fans and terraces. Slopes are 0 to 2 percent. In a representative profile the surface layer is dark, grayish brown, mildly alkaline loam and sandy loam about 21 inches thick. The subsoil extends to a depth of approximately 59 inches. The upper 34 inches is yellowish brown and brown, neutral to moderately alkaline sandy loam, sandy clay loam, and fine gravelly sandy loam. The lower 4 inches is brown, neutral fine gravelly coarse sandy loam. The substratum is brown, neutral gravelly coarse sand that extends to a depth of at least 80 inches. Permeability is moderately slow, runoff is very slow, and the erosion hazard is minimal to slight. Additionally, the shrink-swell potential is low to moderate.

Groundwater

The Project Site is located in the Salinas Valley Groundwater Basin, which is a structural basin (i.e., formed by tectonic processes) consisting of up to 10,000 to 15,000 feet of terrigenous and marine sediments overlying a basement of crystalline bedrock. The sediments are a combination of gravels, sands, silts, and clays that are organized into sequences of relatively coarse-grained and fine-grained materials. When layers within these sequences are spatially extensive and continuous, they form aquifers, which are relatively coarse-grained and are able to transmit significant quantities of groundwater to wells, and aquitards, which are relatively fine-grained and act to slow the movement of groundwater (Monterey County Water Resources Agency).

The Monterey County Water Resources Agency (MCWRA) manages a groundwater survey program consisting of measurements of key wells to monitor monthly fluctuations, and annual measurements of an established network of wells to determine relative changes in storage. Based on available groundwater monitoring data provided by MCWRA and a review of the California State Water Resources Control Board's (SWRCB) Geotracker website, the depth to first groundwater in the area of the Project Site is estimated to range from approximately 140 to 150 feet and flow southwesterly. However, regional groundwater pumping associated with agricultural production activities may influence groundwater depths and flow direction at various times of the year. Depending on the proximity of nearby wells, actual groundwater depths at the site may vary significantly from those noted.

GEOLOGIC HAZARDS ANALYSIS

FAULT RUPTURE HAZARD EVALUATION

In 1972 the State of California passed the Alquist-Priolo Earthquake Fault Zoning Act (AP Act) to mitigate the hazard of surface faulting to structures utilized for human occupancy. The AP Act's primary purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The AP Act defines three categories of fault activity; active (demonstrated movement within the last 11,000 years), potentially active (movement within the past 11,000 to 2,000,000 years), and inactive (no movement within the past 2,000,000 years).

Since 1972 the California Geological Survey (CGS, formerly the California Division of Mines and Geology) has issued a series of 1"=2,000' scale maps delineating Earthquake Fault Zones (EFZs). Structures proposed within mapped EFZs require geologic investigations to demonstrate that the structures will not be constructed across active faults. If an active fault is identified within the boundaries of the Project Site, then the proposed structures must be set back from the EFZ, generally a distance of 50 feet on either side of the identified fault location. The CGS mapping program is ongoing, and areas not currently identified as being located within an EFZ may be included at some later time.

The Project Site is not located within an identified EFZ at this time, and no known active faults traverse or trend towards the Project Site. Therefore, it is Padre’s opinion that the potential for damage to the Project Site due to fault rupture is considered low.

GROUND SHAKING

The Project Site is located within a moderately seismically active region as compared to other areas of California and the proposed structures would likely be subjected to seismic shaking during the life of the project. Major faults in the region with the greatest potential to affect the Project Site include the Reliz Fault located approximately 7 miles to the southwest, the Zayante-Vergeles Fault located approximately 9 miles to the northeast, the San Andreas Fault Zone located approximately 11 miles to the northeast, and the Monterey Bay Fault Zone located approximately 15 miles west of the Project Site (refer to **Plate 4** – Fault Activity Map).

LIQUEFACTION

Liquefaction is defined as the sudden loss of soil shear strength due to a rapid increase of soil pore water pressures caused by cyclic loading from a seismic event. In simple terms, it means that a liquefied soil acts more like a fluid than a solid when shaken during an earthquake. Liquefaction is restricted to certain geologic and hydrologic environments, primarily recently deposited sand and silt in areas with high groundwater levels.

For liquefaction to occur, the following conditions are necessary:

- Granular soils (sand, silty sand, sandy silt, and some gravels);

- A high groundwater table; and
- A low density of the granular soils.

Based on estimated depths to first encountered groundwater (>50 feet), the potential for liquefaction at the Project Site is considered low. Additionally, according to the *2007 Monterey County General Plan – Draft Environmental Impact Report* dated September 2008, the Project Site is located within an area of low relative liquefaction susceptibility. However, actual conditions should be determined by site-specific subsurface exploration and geotechnical analyses as part of the planned Project Site improvements.

SEISMICALLY-INDUCED SETTLEMENT

Seismically-induced settlement refers to settlement of unsaturated granular material as a result of densification and particle rearrangement due to earthquake shaking. Seismically induced settlement differs from settlement resulting from liquefaction because there is not a buildup of excess pore water pressure during the seismic shaking.

There is a potential for seismically induced settlement to adversely affect the Project Site. However, without additional subsurface exploration and laboratory analyses, it is not possible to estimate the magnitude of that potential settlement. Therefore, Padre recommends that a site-specific geotechnical study be completed to provide these data for design of the planned Project Site improvements.

EXPANSIVE SOILS

Depending on moisture content expansive soils can change dramatically in volume. When wet these soils can expand, and conversely contract or shrink when dry. This shrink-swell phenomenon can damage concrete slabs, foundations and pavement. Special building design and construction is typically needed in areas with expansive soils.

According to the United States Department of Agriculture, Soil Conservation Service's, Soil Survey of Monterey County, California dated April 1978; surficial soil at the Project Site consists of a loam material with a low to moderate shrink-swell potential. However, the presence or absence of expansive soils should be verified by site-specific sampling and testing of on-site earth materials as part of a site-specific geotechnical study.

SUBSIDENCE

Land subsidence can occur in valleys containing aquifer systems that are, in part, made up of fine-grained sediments and that have undergone extensive ground-water development. The pore structure of a sedimentary aquifer system is supported by a combination of the granular skeleton of the aquifer system and the fluid pressure of the ground water that fills the intergranular pore space. When groundwater is withdrawn in quantities that result in reduced pore-fluid pressures and water-levels declines, more of the weight of the overlying sedimentary material must be supported by the skeleton, which can result in the compaction of the aquifer and land subsidence (USGS-MWA, 2006).

According to the Monterey County Groundwater Management Plan prepared by the MCWRA and dated May 2006, the MCWRA manages groundwater basin conditions in the Salinas Valley to avoid overdraft conditions and other undesirable effects including land subsidence. MCWRA operates multiple programs to monitor groundwater levels in the Salinas Valley Groundwater Basin. These programs are as follows:

- One set of 80 Salinas Valley wells are measured monthly for groundwater elevations;
- Groundwater levels from approximately 130 wells in the northern Salinas Valley are collected during a single 12-hour period each August to monitor groundwater level during a time of high pumping stress; and
- Each December, approximately 280 Salinas Valley wells are measured for groundwater elevations.

In general there is a lack of historical subsidence in the Salinas Valley and a low potential for it to occur due to a combination of geologic conditions and lack of depressed groundwater levels. However, the potential for subsidence to occur at the Project Site should be addressed as part of a site-specific geotechnical study.

LANDSLIDES AND SLOPE STABILITY

The Project Site is relatively flat, with average slope gradients across the site area of less than 1%. Therefore, the potential for landslides or the failure of natural slopes to affect the Project Site is low. Additionally, according to *2007 Monterey County General Plan – Draft Environmental Impact Report* dated September 2008, the Project Site is located within an area of low earthquake induced landslide susceptibility.

FLOOD HAZARD

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, *Community Panel Number: 06053C0228G, Effective Date April 2, 2009*, the Project Site is mapped as being located in Zone X - areas of 0.2% (500-yr) annual chance flood; areas of 1% (100-year) annual chance flood with depths of less than 1 foot or with drainage areas less than one square mile; and areas protected by levees from 1% annual chance flood. A copy of the flood insurance rate map is presented in **Appendix C**.

DAM INUNDATION

Catastrophic failure of dams is rare and is most likely to occur following significant seismic events. Two reservoirs of significant size and constructed with dams are located upstream from the Project Site. Inundation due to dam failure is considered likely in the event one of the dams fails.

Lake San Antonio Dam, located approximately 73 miles southeast of the Project Site, is constructed with an earthfill dam on the San Antonio River. The dam is 202 feet high, was constructed in 1965, and has a capacity of 335,000 acre-feet. Lake Nacimiento Dam, located approximately 75 miles southeast of the Project Site, is constructed with an earthfill dam on the

Nacimiento River. The dam is 210 feet, was constructed in 1961, and has a capacity of 350,000 acre-feet. The discharge watercourse is the Salinas River located approximately 6 miles southwest of the Project Site. According to the Dam Inundation Map for Monterey County dated January 2010, in the event that either of these dams fail, the Project Site is located outside the limits of inundation.

TSUNAMI/SEICHE

Tsunamis are long-period sea waves generated by earthquakes or submarine landslides, while seiches are oscillations in large bodies of water such as lakes or reservoirs caused by earthquakes or landslides. The Project Site is located approximately 12 miles inland from the Pacific Ocean and greater than 20 miles from the nearest reservoir of significant size. Therefore, the potential for a tsunami and/or seiche to affect the Project Site is considered low.

VOLCANIC ACTIVITY

Volcanic eruptions have occurred in the western United States in historic times, most notably the Mt. Lassen, California, eruptions of 1914 to 1917 and Mt. St. Helens, Washington, in 1980. Currently, the USGS is monitoring an area of potential volcanic activity near Mammoth Lakes/Long Valley, California, which lies approximately 160 miles northeast of the Project Site. Mount Lassen and Mount Shasta are located northwest of the Project Site approximately 260 and 330 miles, respectively. Based on the distance of the Project Site from these volcanic areas, the potential for a volcanic eruption to affect the Project Site is considered low; however the Project Site could potentially be affected by an ash plume.

NATURALLY OCCURRING ASBESTOS (NOA)

Asbestos is a naturally occurring silicate mineral of the amphibole group that has historically been utilized for a variety of purposes including fireproofing due to its fibrous nature, which allowed it to be woven into cloth and formed into various types of construction material. The mineral generally occurs in association with ultramafic rocks (igneous and metamorphic rocks with high iron and magnesium contents) and is a known carcinogen. According to the California Geological Survey *Geologic Map of California, Santa Cruz Sheet (1958, fifth printing 1992 – 1:250,000)*, the nearest exposure of potentially asbestos-bearing ultramafic rocks is located a distance greater than 10 miles from the Project Site. Based on the distance of the Project Site from the nearest mapped exposure, the potential for exposure to elevated levels of NOA in soils at the Project Site is considered low.

RADON

Radon is a colorless, odorless, tasteless, and radioactive gas that is produced as a natural decay product of uranium. Because of its radioactivity, studies have shown that at elevated concentrations there is a link between radon and lung cancer. Persons living in a building with elevated radon concentrations may have an increased risk of contracting lung cancer over a period of years.

Sections 307 and 309 of the Indoor Radon Abatement Act of 1988 (IRAA) directed the United States Environmental Protection Agency (U.S. EPA) to list and identify areas of the

United States with the potential for elevated indoor radon levels. The U.S. EPA's Map of Radon Zones assigns each of the 3,141 counties in the U.S. to one of three zones based on radon potential:

- Zone 1 (red zones: highest potential) – counties have a predicted average indoor radon screening level greater than 4 pico curies per liter (pCi/L);
- Zone 2 (orange zones: moderate potential) – counties have a predicted average indoor radon screening level between 2 and 4 pCi/L; and
- Zone 3 (yellow zones: lowest potential) – counties have a predicted average indoor radon screening level less than 2 pCi/L.

According to the U.S. EPA map of California radon zones, Monterey County is identified as a Zone 2 (orange) county. Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L. According to the California database of indoor radon levels sorted by Zip Code (Feb. 2016), twenty-seven sites site tests were conducted in Monterey County (Zip Code 93905) with three of those sites identified above 4 pCi/L. The highest radon detection was 6 pCi/L. Therefore, the potential for radon hazard at the Project Site is considered moderate and is dependent on building construction specifications.

OIL AND GAS WELLS

Padre reviewed the State of California, Division of Oil, Gas and Geothermal Resources (DOGGR) online mapping system to determine whether any oil and gas wells are located at or in the vicinity of the Project Site. Based on our review of the available DOGGR data, Padre concludes that no active or abandoned oil and/or gas wells are located at the Project Site or within an approximate one-mile radius of the Project Site.

CONCLUSIONS AND RECOMMENDATIONS

Padre makes the following conclusions and recommendations based on the results of this limited geologic and environmental hazards evaluation:

- At this time the Project Site is not located within the boundaries of an Alquist-Priolo Earthquake Fault Zone, and no active faults are known to traverse the Project Site;

- Ground shaking caused by events on distant and nearby active faults is considered a potential seismic hazard at the Project Site;

- The potential for liquefaction is considered low based on estimated depths to high groundwater (>50 feet). However, actual conditions should be determined by site-specific subsurface exploration and geotechnical analyses;

- Seismically-induced settlement caused by earthquake shaking is considered a potential seismic hazard at the Project Site. However, actual conditions should be determined by site-specific subsurface exploration and geotechnical analyses;

- The Project Site is identified as being underlain by soils with a low to medium shrink-swell potential. However, actual conditions should be determined by site-specific subsurface exploration and geotechnical analyses;

- According to the Monterey County Groundwater Management Plan, there is a lack of historical subsidence in the Salinas Valley and a low potential for it to occur due to a combination of geologic conditions and lack of depressed groundwater levels. However, the potential for subsidence to occur at the Project Site should be addressed as part of a site-specific geotechnical study;

- The potential for landslides or the failure of natural slopes to affect the Project Site is considered low;

- The Project Site is located within flood zone Zone X (areas of 0.2% (500-yr) annual chance flood; areas of 1% (100-year) annual chance flood with depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from 1% annual chance flood);

- The nearest dams of significant size are the San Antonio Reservoir Dam and the Lake Nacimiento Dam. The discharge watercourse is the Salinas River located approximately 6 miles southwest of the Project Site. According to the Dam Inundation Map for Monterey County dated January 2010, in the event that either of these dams fail, the Project Site is located outside the limits of inundation;

- The potential for a tsunami or seiche to affect the Project Site is low;

- The potential for a volcanic eruption to affect the Project Site is considered low;

- Based on the distance of the Project Site from the nearest asbestos-bearing ultramafic rocks, the potential for exposure to elevated levels of in soils at the Project Site is considered low;

- The potential for radon hazard associated with surface building structures is considered moderate;

- There are no active or abandoned oil and/or gas wells located on or within a one mile radius of the Project Site;

The results of the report identified ground shaking, liquefaction, seismically induced settlement, expansive soil and subsidence as potential geologic hazards that cannot be eliminated without a site-specific geotechnical study. A site-specific geotechnical study will be required by the California Division of the State Architect, and mitigation measures will be incorporated prior to and/or as part of site improvements and school construction. The geotechnical study generally consists of a number of exploration locations (drill holes, cone penetration test soundings, or other methods) over the site development area. Soil samples are collected and tested in the laboratory and the results of field and laboratory data are used by the geotechnical engineer to develop earthwork and foundation recommendations for the proposed development. The potential geohazards identified in this report (if found to be present at the Project Site) can typically be mitigated through either ground improvement methods or the use of deep foundation systems.

This report was prepared in general accordance with California *Education Code* §17212 and 17212.5 and California Geological Survey Note 48 and Special Publication 117.

LIMITATIONS

This report has been prepared by Padre for Alisal Union School District under the professional supervision of the principal and/or senior staff whose signatures and/or seals(s) appear hereon. Neither Padre, nor any employee assigned to this assessment program, has an interest or contemplated interest, financial or otherwise, in the subject site or surrounding properties, or in any entity that owns, leases, or occupies the subject site or surrounding properties or that may be responsible for environmental issues identified during the course of this assessment, or a personal bias with respect to the parties involved.

The information contained in this report has received appropriate technical review and approval. The conclusions represent professional judgment and are founded upon the findings of the assessment activities identified in the report and the interpretation of such data, based on our experience and expertise according to the existing standard of care. No other warranty or limitation exists, either expressed or implied.

In expressing the opinions stated in this report, Padre has exercised the degree of skill and care ordinarily exercised by a reasonable, prudent environmental professional in the same community and in the same time frame, given the same or similar facts and circumstances. Documentation and data provided by others, or from the public domain, and referred to in the preparation of this assessment, have been used and referenced with the understanding that Padre does not assume responsibility or liability for their accuracy.

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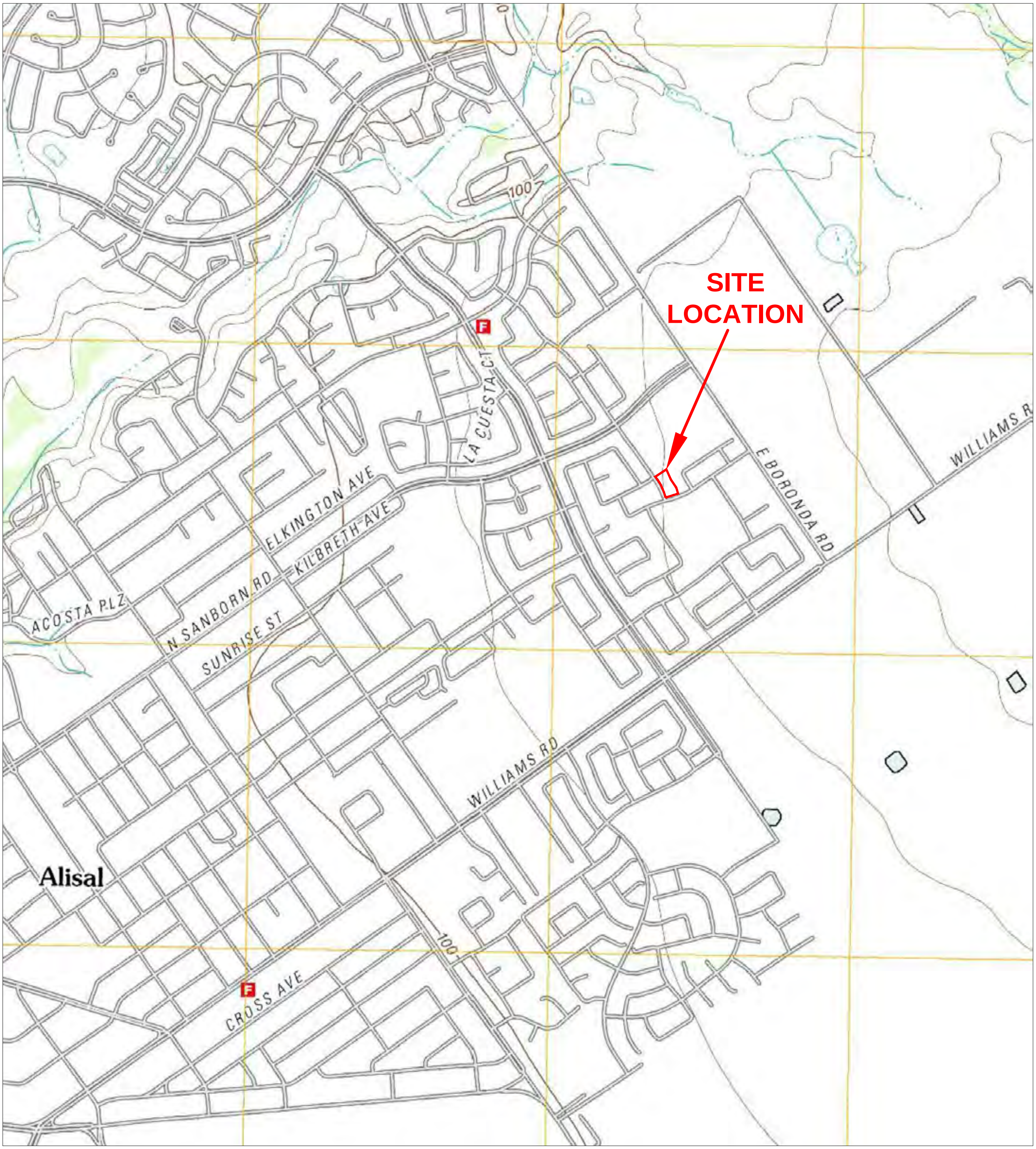
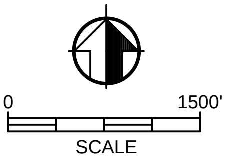
PLATES



U.S.G.S. 7.5 MINUTE QUADRANGLE
NATIVIDAD, CALIFORNIA 2012



padre
associates, inc.
ENGINEERS, GEOLOGISTS &
ENVIRONMENTAL SCIENTISTS

VACANT LOT
1081 BUCKHORN DRIVE
SALINAS, MONTEREY COUNTY, CALIFORNIA

PROJECT NO.	DATE	DR. BY	APP. BY
1701-2041	9/6/17	AC	AJK

PLATE 1

SITE LOCATION

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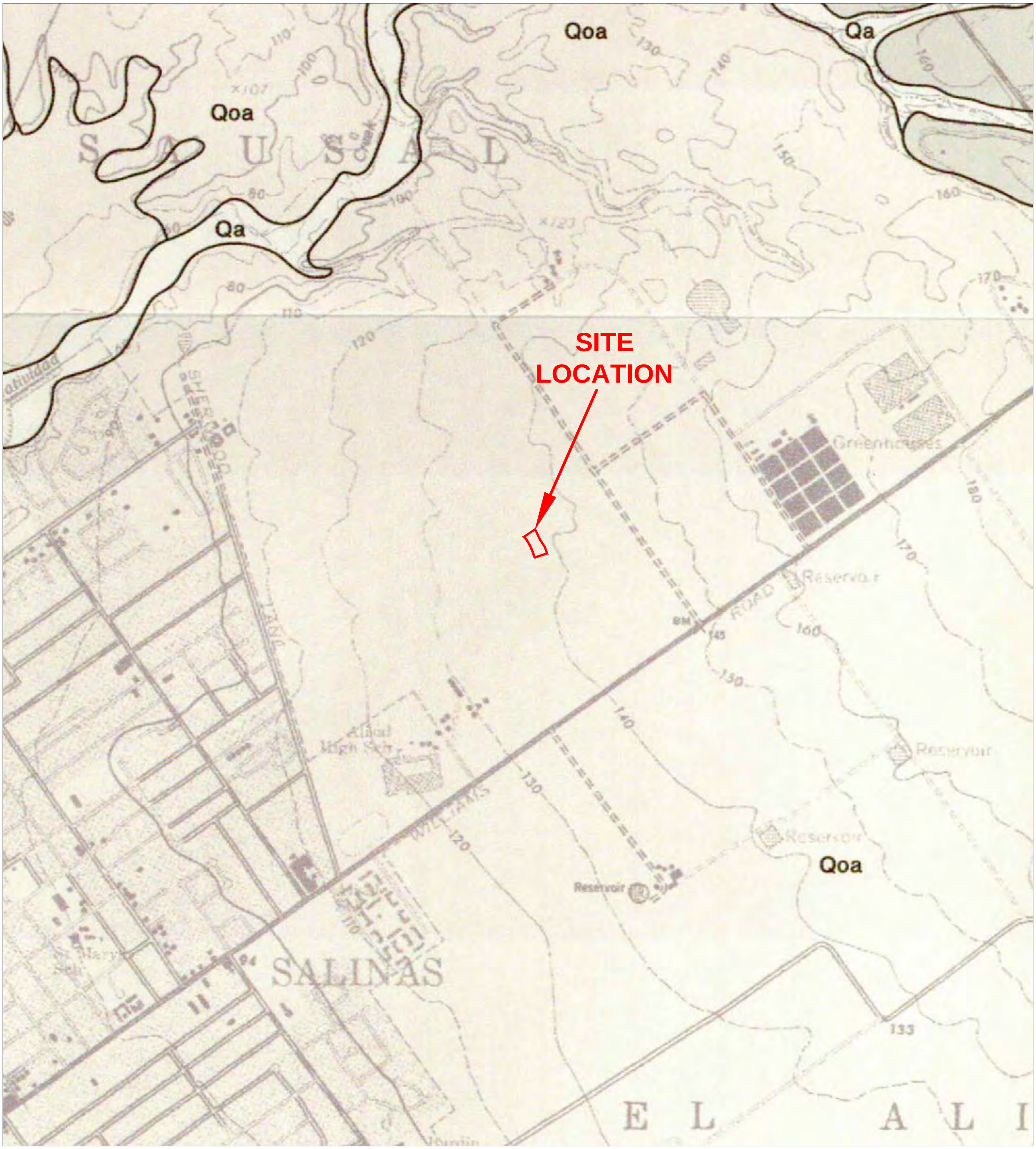
SOURCE: GOOGLE EARTH MAP DATED JUNE 2017

VACANT LOT
1081 BUCKHORN DRIVE
SALINAS, MONTEREY COUNTY, CALIFORNIA

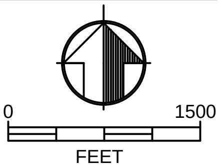
PROJECT NO. 1701-2401	DATE 9/6/17	DR. BY AC	APP. BY AJK

PLATE 2

SITE MAP



GEOLOGIC MAP OF THE NATIVIDAD QUADRANGLE
MONTEREY COUNTY, CALIFORNIA
THOMAS W. DIBBLEE, JR., 2007
Qoa - Dissected older alluvium



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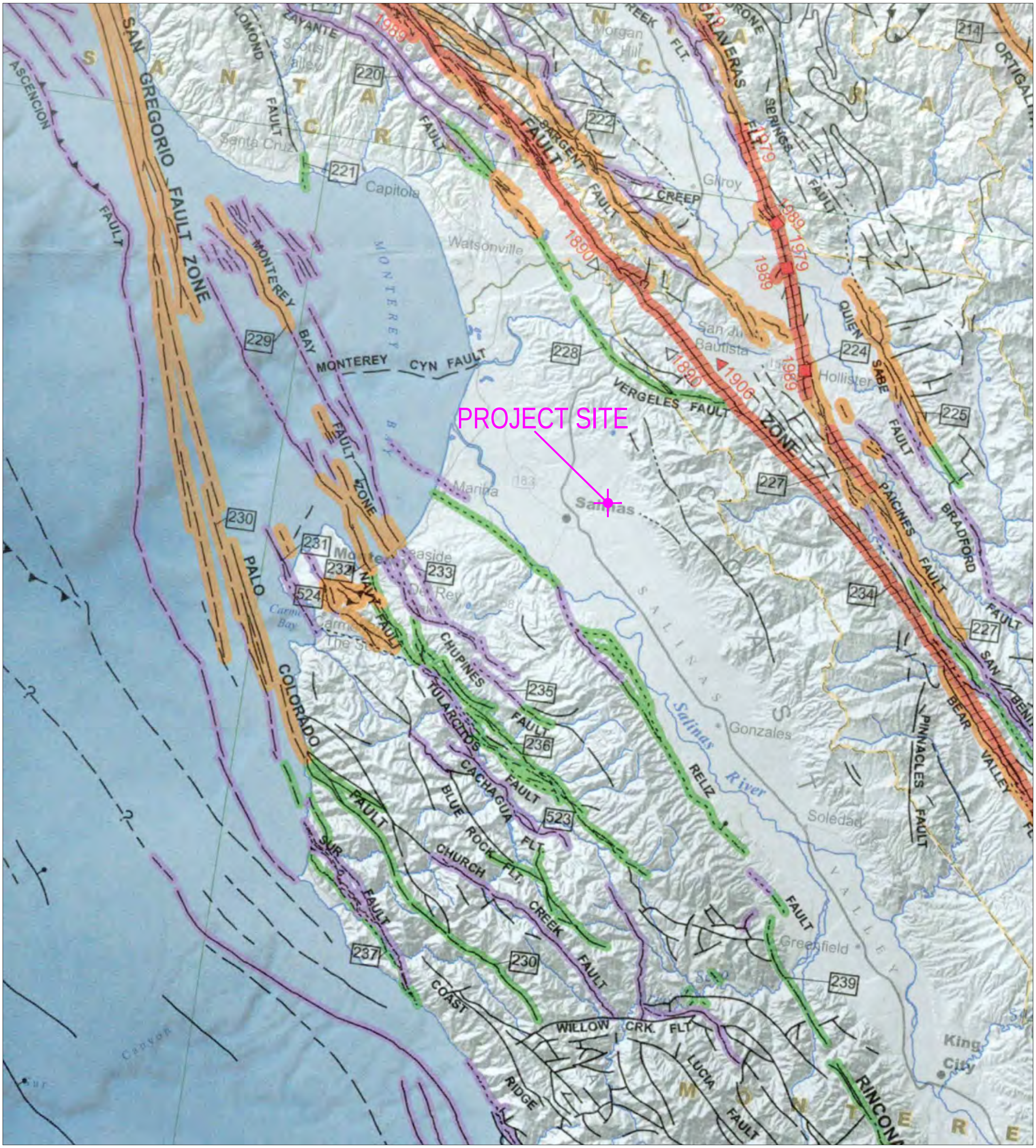
VACANT LOT
1081 BUCKHORN DRIVE
SALINAS, MONTEREY COUNTY, CALIFORNIA

PROJECT NO.	DATE	DR. BY	APP. BY
1701-2041	9/6/17	AC	JKS

PLATE 3

GEOLOGIC MAP



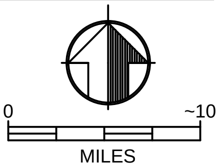
MAP TAKEN FROM CALIFORNIA GEOLOGIC DATA MAP SERIES
FAULT ACTIVITY MAP OF CALIFORNIA AND ADJACENT AREAS (2010)

🟥 HISTORIC DISPLACEMENT (LAST 200 YEARS)

🟧 HOLOCENE FAULTS (10,000 TO 200 YEARS)

🟩 FAULTS SHOWING EVIDENCE OF DISPLACEMENT DURING LATE QUATERNARY TIME.

🟪 QUATERNARY FAULTS (AGE UNDIFFERENTIATED; SOMETIME DURING PAST 1.6 MILLION YEARS)



padre
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VACANT LOT
1081 BUCKHORN DRIVE
SALINAS, MONTEREY COUNTY, CALIFORNIA

PROJECT NO.	DATE	DR. BY	APP. BY
1701-2041	9/6/17	AC	AJK

PLATE 4

FAULT ACTIVITY MAP

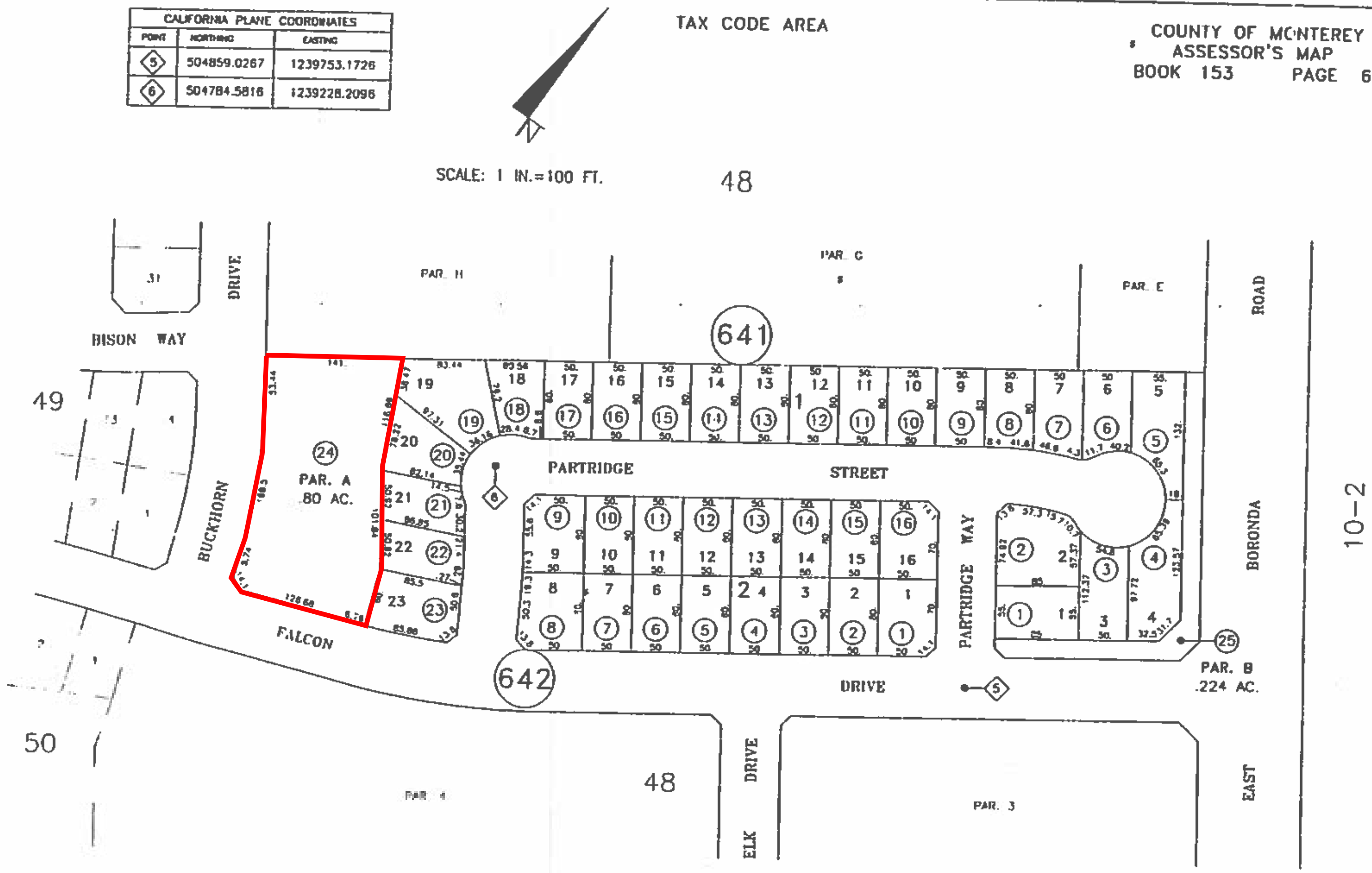
APPENDIX A
ASSESSOR'S PARCEL MAP

CALIFORNIA PLANE COORDINATES		
POINT	NORTHING	EASTING
◇5	504859.0267	1239753.1726
◇6	504784.5816	1239228.2096

TAX CODE AREA

COUNTY OF MONTEREY
ASSESSOR'S MAP
BOOK 153 PAGE 64

SCALE: 1 IN.=100 FT.



TRACT NO. 1375
FALCON RIDGE SUBDIVISION
RECORDED 1-29-02

THIS MAP IS INTENDED TO BE USED FOR
PROPERTY TAX ASSESSMENT PURPOSES ONLY

APPENDIX B
PROJECT SITE PHOTOGRAPHS

Photo 1: Looking southwest across the Project Site from the northeast corner. The northeast intersection of Buckhorn Drive and Falcon Drive is located in the background.

Photo 2: Looking northeast across the Project Site from Buckhorn Drive. Residences and an apartment complex are located in the background.

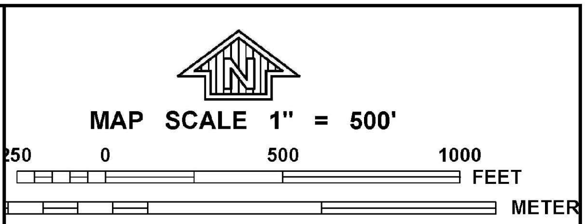
Photo 3: Looking south along Buckhorn Drive. The Project Site is located on the left.

Photo 4: Looking north along east Project Site boundary. Residence are located on the right.

Photo 5: Looking north from the Project Site at detention basin and apartment complex.

Photo 6: Looking south from the Project Site across Falcon Drive. A small public park is located on the right and the Dr. Oscar F. Loya Elementary School is located in the background.

APPENDIX C
FLOOD INSURANCE RATE MAP



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0228G

FIRM

FLOOD INSURANCE RATE MAP

MONTEREY COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 228 OF 2050

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MONTEREY COUNTY	060195	0228	G
SALINAS, CITY OF	060202	0228	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06053C0228G

EFFECTIVE DATE
APRIL 2, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

░ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

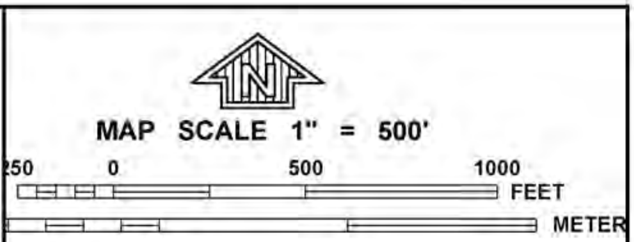
ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	1% annual chance floodplain boundary
———	0.2% annual chance floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
••••••••••••••••	CBRS and OPA boundary
▬	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~ *513* ~~~	Base Flood Elevation line and value; elevation in feet*



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0228G

FIRM

FLOOD INSURANCE RATE MAP

MONTEREY COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 228 OF 2050

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MONTEREY COUNTY	060195	0228	G
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Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

U.S. DEPARTMENT OF HOMELAND SECURITY

MAP NUMBER
06053C0228G

EFFECTIVE DATE
APRIL 2, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix E

Noise Impact Assessment

NOISE IMPACT ASSESSMENT

FOR

BUCKHORN EARLY LEARNING CENTER

ALISAL UNION SCHOOL DISTRICT

SALINAS, CA

APRIL 2019

PREPARED FOR:

Odell Planning & Research, Inc.
49370 Road 426, Suite C
Oakhurst, CA 93644

PREPARED BY:

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INTRODUCTION

This report describes the existing noise environment in the project vicinity and identifies potential noise impacts associated with the development of the proposed Buckhorn Early Learning Center (Project). Project impacts are evaluated relative to the applicable noise level criteria adopted by the City of Salinas. Noise-reduction measures have been identified, where necessary, to reduce projected onsite noise levels at proposed noise-sensitive locations.

PROPOSED PROJECT OVERVIEW

The Alisal Union School District (District) is proposing to undertake the *Buckhorn Early Learning Center*. The proposed project is located at 1081 Buckhorn Drive, Salinas, California, on the northeast corner of Buckhorn Drive and Falcon Drive. The project location is depicted in Figure 1. The project site and surrounding land uses are depicted in Figure 2. The proposed project involves the construction of a one-story 8,200 square-feet building with five classrooms, a playground, and a 22-stall parking lot on a 0.8-acre parcel. The Project is estimated to serve up to 90 preschool-aged children and 15 faculty members. Hours of operation would occur during the weekdays from 7:30 AM to 3:30 PM. The proposed site plan is depicted in Figure 3.

ACOUSTIC FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound, as described in more detail below, is mechanical energy transmitted in the form of a wave because of a disturbance or vibration.

AMPLITUDE

Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

FREQUENCY

Frequency is the number of fluctuations in the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to the sound of different frequencies. Sound waves below 16 Hz or above 20,000 Hz cannot be heard at all, and the ear is more sensitive to sound in the higher portion of this range than in the lower. To approximate this sensitivity, environmental sound is usually measured in A-weighted decibels (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA. Common community noise sources and associated noise levels, in dBA, are depicted in Figure 4.

ADDITION OF DECIBELS

Because decibels are logarithmic units, sound levels cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces a sound level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

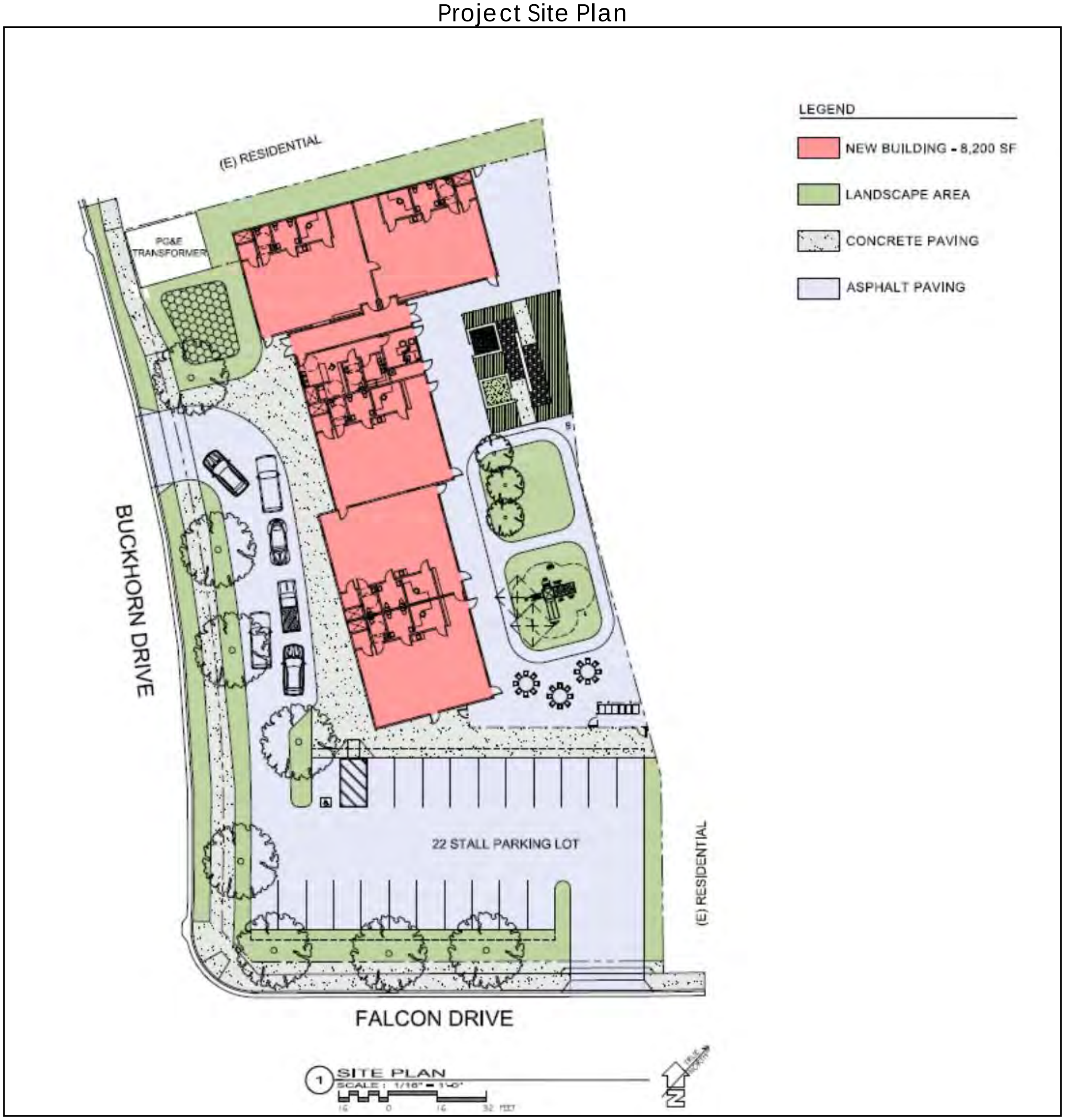
Figure 1
Project Location

Source: ISA 2018

Figure 2
Project Site & Nearby Land Uses

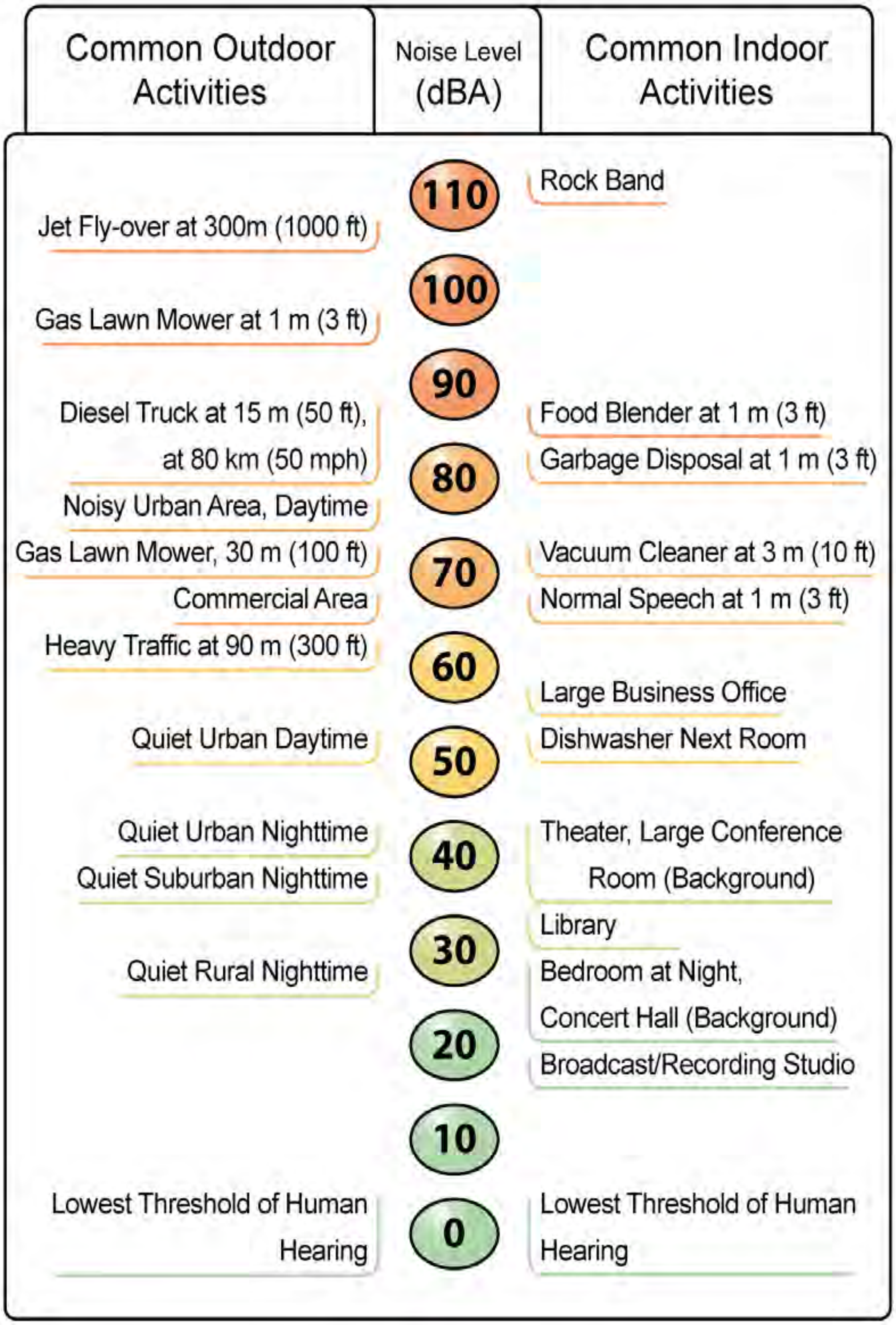
Notes: Locations are approximate.

Figure 3
Project Site Plan



Source: ISA 2018

Figure 4
Typical Community Noise Levels



Source: Caltrans 2016

SOUND PROPAGATION & ATTENUATION

Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level decreases (attenuates) at a rate of approximately 6 decibels for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path, and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 decibels for each doubling of distance from a line source, depending on ground surface characteristics. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water,), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between a line source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 decibels per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation for soft surfaces results in an overall attenuation rate of 4.5 decibels per doubling of distance from a line source.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in an approximate 5 dB of noise reduction. Taller barriers provide increased noise reduction.

NOISE DESCRIPTORS

The decibel 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. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the sound-pressure level in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies, which is referred to as the "A-weighted" sound level (expressed in units of dBA). The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-weighted noise scale. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with environmental noise.

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are typically used. For the evaluation of environmental noise, the most commonly used descriptors are L_{eq}, L_{dn}, and CNEL. The energy-equivalent noise level, L_{eq}, is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn}, is the 24-hour average of the noise intensity, with a 10-dBA "penalty" added for nighttime noise (10 p.m. to 7 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to L_{dn} but adds an additional 5-dBA penalty for evening noise (7 p.m. to 10 p.m.) Common noise descriptors are summarized in Table 1.

Table 1
Common Acoustical Terms and Descriptors

Descriptor	Definition
Decibel (dB)	A unit-less measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to referenced sound pressure amplitude. The reference pressure is 20 micro-pascals.
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
Energy Equivalent Noise Level (L_{eq})	The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
Minimum Noise Level (L_{min})	The minimum instantaneous noise level during a specific period of time.
Maximum Noise Level (L_{max})	The maximum instantaneous noise level during a specific period of time.
Day-Night Average Noise Level (DNL or L_{dn})	The 24-hour Leq with a 10 dBA "penalty" for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increased sensitivity to noise during these hours.
Community Noise Equivalent Level (CNEL)	The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA "penalty" added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated L_{dn}.

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. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;
- A 10-dB 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 HUMAN ACTIVITIES

The extent to which environmental noise is deemed to result in increased levels of annoyance, activity interference, and sleep disruption varies greatly from individual to individual depending on various factors, including the loudness or suddenness of the noise, the information value of the noise (e.g., aircraft overflights, child crying, fire alarm), and an individual's sleep state and sleep habits. Over time, adaptation to noise events and increased levels of noise may also occur. In terms of land use compatibility, environmental noise is often evaluated in terms of the potential for noise events to result in increased levels of annoyance, sleep disruption, or interference with speech communication, activities, and learning. Noise-related effects on human activities are discussed in more detail, as follows:

Speech Communication

For most noise-sensitive land uses, an interior noise level of 45 dB L_{eq} is typically identified for the protection of speech communication in order to provide for 100-percent intelligibility of speech sounds. Assuming a minimum 20-dB reduction in sound level between outdoors and indoors, with windows closed, this interior noise level of 45 dB L_{eq} would equate to an exterior noise level of 65 dBA L_{eq}. For outdoor voice communication, an exterior noise level of 60 dBA L_{eq} allows normal conversation at distances up to 2 meters with 95 percent sentence intelligibility (U.S. EPA 1974.) Based on this information, speech interference begins to become a problem when steady noise levels reach approximately 60 to 65 dBA. Within interior noise environments, an average-hourly background noise level of 45 dBA L_{eq} is typically recommended for noise-sensitive land uses, such as educational facilities (Caltrans 2002[a].)

Learning

Closely related to speech interference are the effects of noise on learning and, more broadly, on cognitive tasks. Recent studies have shown a strong relationship between noise and children's reading ability. Children's attention spans also appear to be adversely affected by noise. Adults are affected as well. Some studies indicate that, in a noisy environment, adults have increased difficulty accomplishing complex tasks. One of the issues associated with the assessment of these effects is which noise metric correlates most closely with the impacts. For example, the average-daily noise level (i.e., CNEL/L_{dn}), which incorporates a nighttime weighting, may not be the best measure of noise impacts on schools given that operational activities are often limited to the daytime hours (Caltrans 2002(a.)

Various standards and recommended criteria have been developed to specifically address classroom noise. For instance, with regard to transportation sources, the California Department of Transportation has adopted abatement criteria that limit the maximum interior average-hourly noise level within classrooms, as well as other noise-sensitive interior uses, to 52 dBA L_{eq} (Caltrans 2006.) In June 2002, the American National Standards Institute, Inc. (ANSI) released a new classroom acoustics standard entitled Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools" (ANSI S12.60-2002). For schools exposed to intermittent background noise sources, such as airport and other transportation noise, the ANSI standards recommend that interior noise levels not exceed 40 dBA L_{eq} during the noisiest hour of the day. At present complying with the ANSI-recommended standard is voluntary in most locations.

Annoyance & Sleep Disruption

With regard to potential increases in annoyance, activity interference, and sleep disruption, land use compatibility determinations are typically based on the use of the cumulative noise exposure metrics (i.e., CNEL or L_{dn}). Perhaps the most comprehensive and widely accepted evaluation of the relationship between noise exposure and the extent of annoyance was one originally developed by Theodore J. Schultz in 1978. In 1978 the research findings of Theodore J. Schultz provided support for L_{dn} as the descriptor for environmental noise. Research conducted by Schultz identified a correlation between the cumulative noise exposure metric and individuals who were highly annoyed by transportation noise. The Schultz curve, expressing this correlation, became a basis for noise standards. When expressed graphically, this relationship is typically referred to as the Schultz curve. The Schultz curve indicates that approximately 13 percent of the population is highly annoyed at a noise level of 65 dBA L_{dn}. It also indicates that the percent of people describing themselves as being highly annoyed accelerates smoothly between 55 and 70 dBA L_{dn}. A noise level of 65 dBA L_{dn} is a commonly referenced dividing point between lower and higher rates of people describing themselves as being highly annoyed (Caltrans 2002[a].)

The Schultz curve and associated research became the basis for many of the noise criteria subsequently established for federal, state, and local entities. Most federal and state of California regulations and policies related to transportation noise sources establish a noise level of 65 dBA CNEL/L_{dn} as the basic limit of acceptable noise exposure for residential and other noise-sensitive land uses. For instance, with respect to aircraft noise, both the Federal Aviation Administration (FAA) and the State of California have identified a noise level of 65 dBA L_{dn} as the dividing point between normally compatible and normally incompatible residential land use generally applied for the determination of land use compatibility. For noise-sensitive land uses exposed to aircraft noise, noise levels in excess of 65 dBA CNEL/L_{dn} are typically considered to result in a potentially significant increase in levels of annoyance (Caltrans 2002[a].)

Allowing for an average exterior-to-interior noise reduction of 20 dB, an exterior noise level of 65 dBA CNEL/L_{dn} would equate to an interior noise level of 45 dBA CNEL/L_{dn}. An interior noise level of 45 dB CNEL/L_{dn} is generally considered sufficient to protect against activity interference at most noise-sensitive land uses, including residential dwellings, and would also be sufficient to protect against sleep interference (U.S. EPA 1974.) Within California, the California Building Code establishes a noise level of 45 dBA CNEL as the maximum acceptable interior noise level for residential uses (other than detached single-family dwellings). Use of the 45 dBA CNEL threshold is further supported by recommendations provided in the State of California Office of Planning and Research's *General Plan Guidelines*, which recommend an interior noise level of 45 dB CNEL/L_{dn} as the maximum allowable interior noise level sufficient to permit "normal residential activity."

The cumulative noise exposure metric is currently the only noise metric for which there is a substantial body of research data and regulatory guidance defining the relationship between noise exposure, people's reactions, and land use compatibility. However, when evaluating environmental noise impacts involving intermittent noise events, such as aircraft overflights and train passbys, the use of cumulative noise metrics may not provide a thorough understanding of the resultant impact. The general public often finds it difficult to understand the relationship between intermittent noise events and cumulative noise exposure metrics. In such instances, supplemental use of other noise metrics, such as the L_{eq} or L_{max} descriptor, may be helpful as a means of increasing public understanding regarding the relationship between these metrics and the extent of the resultant noise impact (Caltrans 2002[a].)

EXISTING NOISE ENVIRONMENT

NOISE-SENSITIVE LAND USES

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include hospitals, convalescent facilities, parks, hotels, libraries, places of worship, and other uses where low interior noise levels are essential.

Nearby noise-sensitive receptors include students located at Dr. Oscar F. Loya Elementary School, as well as, occupants of nearby residential dwellings. The nearest residential dwellings are located adjacent to the project site, along the northern and eastern boundaries. On the eastern boundary of the project site, existing 6-foot noise barriers provide a 5 dBA reduction in noise. Residential uses are also located to the west of the project site, across Buckhorn Drive, and to the south of the project site, across Falcon Drive. In addition, a recreational field at Dr. Oscar F. Loya Elementary School is located approximately 60 feet southeast from the project site. Nearby land uses are depicted in Figure 2.

AMBIENT NOISE ENVIRONMENT

To document existing ambient noise levels in the project area, short-term ambient noise measurements were conducted on December 12, 2018, using a Larson Davis Laboratories, Type I, Model 820 integrating sound-level meter. The meter was calibrated before use and is certified to be in compliance with ANSI specifications. Measured ambient daytime noise levels are summarized in Table 2. Measured daytime ambient average-hourly noise levels (in dBA L_{eq}) ranged from the low to mid 40's.

Table 2
Summary of Measured Ambient Noise Levels

Location	Noise Sources Noted	Noise Level (dBA)	
		L_{eq}	L_{max}
Buckhorn Drive near Bison Way, approximately 35 feet from road centerline.	Vehicle traffic and children playing at the nearby school.	44.2	54.8
Falcon Drive, approximately 25 feet from road centerline.	Vehicle traffic and children playing at the nearby school.	42.7	56.3
Falcon Drive near Buckhorn Drive, approximately 35 feet from road centerline.	Vehicle traffic and children playing at the nearby school.	43.4	56.1
Ambient noise measurements were conducted on December 12, 2018, using a Larson Davis Laboratories, Type I, Model 820 integrating sound-level meter.			

REGULATORY SETTING

STATE

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land use compatibility criteria.

California General Plan Guidelines

The *State of California General Plan Guidelines*, published by the Governor's Office of Planning and Research (OPR 2003), also provides guidance for the acceptability of projects within specific CNEL/L_{dn} contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. For school land uses, the *State of California General Plan Guidelines* identifies a "normally acceptable" exterior noise level of up to 70 dBA CNEL/L_{dn}. Schools are considered "conditionally acceptable" within noise environments of 60 to 70 dBA CNEL/L_{dn} and "normally unacceptable" within exterior noise environments of 70 to 80 CNEL/L_{dn} and "clearly unacceptable" within exterior noise environments in excess of 80 dBA CNEL/L_{dn}. Assuming a minimum exterior-to-interior noise reduction of 20 dB, an exterior noise environment of 65 dBA CNEL/L_{dn} would allow for a normally acceptable interior noise level of 45 dBA CNEL/L_{dn}.

LOCAL

City of Salinas General Plan

To ensure that noise producers do not adversely affect sensitive receptors, the City uses land use compatibility standards when planning and making development decisions. The City's noise standards for land use compatibility are summarized in Table 3. The City's noise standards are based on land use designation and incorporation of available noise-reduction measures for determination of land use compatibility. As depicted in Table 3, residential land uses are considered "normally acceptable" within exterior noise environments up to 60 dBA CNEL/L_{dn}, and "conditionally acceptable" within exterior noise environments up to 70 dBA CNEL/L_{dn}. Office and commercial land uses are considered "normally acceptable" within exterior noise environments up to 65 dBA CNEL/L_{dn}, and "conditionally acceptable" within exterior noise environments up to 75 dBA CNEL/L_{dn}. These noise standards apply to newly proposed land uses for which the City has discretionary approval (City of Salinas 2002).

City of Salinas Municipal Code

Chapter 21A, Noise Regulation, of the City Municipal Code defines various classes of noise (i.e., Class A, Class B, Class C or Class D) and identifies noise regulation standards based on those classes. Certain noise sources are prohibited and the ordinance establishes an enforcement process. Accordingly, the operation of landscape maintenance equipment and construction projects are typically prohibited between the hours of 9:00 p.m. and 7:00 a.m. (City of Salinas 2010). The City does not identify noise exposure standards for construction activities.

Chapter 37, Zoning, of the City's Municipal Code, also contains supplemental noise performance standards for non-transportation noise sources that are applied to various land use districts. Section 37-50.180 establishes allowable exterior noise levels for agricultural, residential, commercial, industrial, and public and semipublic districts. For sites within areas designated residential, the maximum acceptable exterior noise level, as measured at the property boundary, is 60 dBA CNEL. The highest allowable noise level for public and semipublic uses is 60 dBA CNEL and 65 dBA CNEL for mixed-use and commercial land uses (City of Salinas 2010). It is important to note that the City's noise standards are based on average daily noise levels. The noise ordinance does not identify noise standards based on other noise descriptors, such as average-hourly or maximum intermittent noise descriptors.

Table 3
City of Salinas General Plan - Land Use Compatibility Noise Criteria

Land Use Category	Noise Exposure Zones-(dBA CNEL/L_{dn})			
	A	B	C	D
Residential	<60	60-70	70-75	>75
Transient lodging - motels, hotels	<60	60-75	75-80	>80
Schools, libraries, churches, hospitals, nursing homes	<60	60-70	70-80	>80
Auditoriums, concert halls, amphitheaters	--	<70	--	>70
Sports arena, outdoor spectator sports	--	<75	--	>75
Playgrounds, parks	<70	--	70-75	>73
Golf courses, riding stables, water recreation, cemeteries	<70	--	70-80	>80
Office buildings, business commercial and professional	<65	60-75	>75	--
Industrial, manufacturing, utilities, agriculture	<70	70-75	>75	--
Zone A	*Normally Acceptable*: Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements.			
Zone B	*Conditionally Acceptable*: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.			
Zone C	*Normally Unacceptable*: New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified and insulation features included in the design.			
Zone D	*Clearly Unacceptable*: New construction or development clearly should not be undertaken.			

Source: City of Salinas 2002

GROUNDBORNE VIBRATION

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception of the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating. Vibration can be measured in terms of acceleration, velocity, or displacement.

The effects of groundborne vibration levels, with regard to human annoyance and structural damage, is influenced by various factors, including ground type, the distance between source and receptor, and duration. Overall effects are also influenced by the type of the vibration event, defined as either continuous or transient. Continuous vibration events would include most construction equipment, including pile drivers, and compactors; whereas, transient sources of vibration create single isolated vibration events, such as demolition ball drops and blasting. Threshold criteria for continuous and transient events are summarized in Tables 4 and 5, respectively.

As indicated in Table 4, the threshold at which there is a risk to normal structures from continuous events is 0.3 in/sec ppv for older residential structures and 0.5 in/sec ppv for newer building construction. A threshold of 0.5 in/sec ppv also represents the structural damage threshold applied to older structures for transient vibration sources. With regard to human perception (refer to Table 5), vibration levels would begin to become distinctly perceptible at levels of 0.04 in/sec ppv for continuous events and 0.25 in/sec ppv for transient events. Continuous vibration levels are considered annoying for people in buildings at levels of 0.2 in/sec ppv (Caltrans 2013).

Table 4
Damage Potential to Buildings at Various Groundborne Vibration Levels

Structure and Condition	Vibration Level (in/sec ppv)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely Fragile Historic Buildings, Ruins, Ancient Monuments	0.12	0.08
Fragile Buildings	0.2	0.1
Historic and Some Old Buildings	0.5	0.25
Older Residential Structures	0.5	0.3
New Residential Structures	1.0	0.5
Modern Industrial/Commercial Buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2013

Table 5
Annoyance Potential to People at Various Groundborne Vibration Levels

Human Response	Vibration Level (in/sec ppv)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.9	0.10
Annoying to People in Buildings	--	0.2
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

-- Not Available

Source: Caltrans 2013

PROJECT IMPACTS

THRESHOLDS OF SIGNIFICANCE

The following significance thresholds used for the assessment of noise-related impacts are based on the California Environmental Quality Act (CEQA) Guidelines and City of Salinas' noise standards.

- Short-term Noise Exposure Impacts. Short-term construction noise impacts would be considered significant if construction activities would result in substantial increases in ambient noise levels during the more noise-sensitive nighttime hours (i.e., 9:00 p.m. to 7:00 a.m.), in accordance with the City's noise control ordinance.
- Long-term Noise Exposure Impacts. Long-term non-transportation and transportation noise impacts would be considered significant if the proposed project would result in substantial increases in ambient noise levels at nearby noise-sensitive land uses that would exceed the City's exterior noise exposure standard of 60 dBA CNEL.
- Groundborne Vibration. The CEQA Guidelines do not define the levels at which groundborne vibration levels would be considered excessive. For this reason, Caltrans' recommended groundborne vibration thresholds were used for the evaluation of impacts based on the increased potential for structural damage and human annoyance, as identified in Table 4 and Table 5, respectively. Based on these levels, groundborne vibration levels exceeding 0.2 in/sec ppv at nearby structures would be considered to have a potentially significant impact (Caltrans 2013).
- Substantial Increase in Noise Levels. The *CEQA Guidelines* do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." As discussed previously in this section, a noise level increase of 3 dBA is barely perceptible to most people, a 5 dBA increase is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness. For purposes of this analysis, a significant increase in ambient noise levels would be defined as an increase of 3 dBA, or greater.

METHODOLOGY

Short-Term Construction Noise

Short-term noise impacts associated with construction activities were analyzed based on typical construction equipment noise levels and distances to the nearest noise-sensitive land uses. Noise levels were predicted based on an average noise-attenuation rate of 6 dB per doubling of distance from the source.

Long-term Operational Noise

Non-transportation noise levels were evaluated based on representative noise levels derived from existing environmental documentation and noise monitoring data obtained from similar land uses. Traffic noise levels were calculated using the Federal Highway Administration (FHWA) roadway noise prediction model (FHWA-RD-77-108) based on California's vehicle reference noise levels and traffic data obtained from the traffic analysis prepared for this project. Additional input data included day/night percentages of autos, medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. The project's contribution to traffic noise levels along area roadways was determined by comparing the predicted noise levels with and without project-generated traffic.

IMPACT DISCUSSIONS AND MITIGATION MEASURES

Impact Noise-A: *Would the project result in the 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?*

Noise generated by the proposed project would occur during short-term construction and long-term operation. Noise-related impacts associated with short-term construction and long-term operations of the proposed project are discussed separately, as follows:

Short-term Construction Noise

Construction noise typically occurs intermittently and varies depending upon the nature or phase (e.g., demolition/land clearing, grading and excavation, erection) of construction. Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Although noise ranges were found to be similar for all construction phases, the initial site preparation phase tended to involve the most equipment.

Table 6

Typical Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source	
	L_{max}	L_{eq}
Air Compressor	80	76
Backhoe/Front-End Loader	80	76
Compactor	80	73
Concrete Mixer Truck	85	81
Concrete Vibratory Mixer	80	73
Crane, Mobile	85	77
Dozer	85	81
Excavator	85	81
Generator	82	79
Grader	85	81
Jack Hammer	85	78
Paver	85	82
Pneumatic Tools	85	82
Roller	85	78
Sources: FTA 2006		

As noted in Table 6, instantaneous noise levels (in dBA L_{max}) generated by individual pieces of construction equipment typically range from approximately 80 dBA to 85 dBA L_{max} at 50 feet (FTA 2006). Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Based on typical off-road equipment usage rates, average-hourly noise levels would be approximately 82 dBA L_{eq}, or less, at 50 feet.

The City has not adopted noise standards that apply to short-term construction activities. However, based on screening noise criteria commonly recommended by federal agencies, construction activities would generally be considered to have a potentially significant impact if average-hourly daytime noise levels would exceed 80 dBA L_{eq} at noise-sensitive land uses, such as residential land uses (FTA 2006). Assuming an average-hourly construction noise level of 82 dBA L_{eq} at 50 feet, predicted noise levels at the nearest residence and classroom would be approximately 74 dBA L_{eq} and 55 dBA L_{eq}, respectively. Predicted exterior noise levels would not exceed the exterior noise threshold of 80 dBA L_{eq}.

As noted earlier in this report, interior noise levels of approximately 45 dBA L_{eq} are typically recommended to minimize impacts on speech interference and the learning environment. Based on the predicted exterior noise levels noted above and assuming an average exterior-to-interior noise reduction of 20 dB, predicted interior noise levels within the nearest classroom would be approximately 35 dBA L_{eq}. Predicted interior noise levels of the nearest classroom would not exceed the commonly applied interior noise standard of 45 dBA L_{eq}. With regard to residential land uses, activities occurring during the more noise-sensitive evening and nighttime hours could result in increased levels of annoyance and potential sleep disruption. Because the proposed project does not identify hourly restrictions for noise-generating construction activities, noise-generating construction activities would be considered to have a *potentially significant* short-term noise impact.

Mitigation Measures

MM Noise-1:

a. Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the daytime hours of 7:00 a.m. and 9:00 p.m. Construction activities shall be prohibited on Sundays and legal holidays.

b. Stationary construction equipment (e.g., portable power generators) should be located at the furthest distance possible from nearby residences. If deemed necessary, portable noise barriers shall be erected sufficient to shield nearby residences from direct line-of-sight of stationary construction equipment.

c. Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment-engine shrouds shall be closed during equipment operation.

d. When not in use, motorized construction equipment shall not be left idling for periods greater than five minutes.

Significance After Mitigation

Implementation of the above mitigation measures would limit construction activities to the less noise-sensitive daytime hours, which would reduce potential increases in levels of annoyance and sleep disruption to occupants of nearby residential dwellings. Additional measures, such as limitations on equipment idling and use of equipment exhaust mufflers, would further reduce potential noise impacts to nearby land uses. With mitigation and given that construction-related activities would be short-term, this impact is considered *less than significant*.

Long-term Operational Noise

Potential long-term increases in noise associated with the proposed project would be primarily associated with the operation of building equipment, such as heating, ventilation, and air conditioning (HVAC) units, outdoor recreational activities, and vehicle use within onsite parking lots.

Stationary Equipment

The proposed project would not result in the introduction of any new major sources of stationary noise sources. Stationary noise sources would be predominantly associated with the operation of building mechanical equipment. Building mechanical equipment would be located within the structure, enclosed, or placed on rooftop areas away from direct public exposure. In addition, the operation of building mechanical equipment would be predominantly limited to the daytime hours of operations. As a result, significant increases in noise levels associated with onsite building mechanical equipment would not be projected to occur with project implementation. Noise levels associated with stationary equipment operation would be considered to have a *less-than-significant* impact.

Recreational Facilities

Playground

The project would include the development of a small playground located along the eastern boundary of the project site. The playground would be located adjacent to existing residential land uses. Existing 6-foot noise barriers are located on the eastern property line of the project site adjacent to residential dwellings. The existing barrier would provide an approximate 5 dBA reduction in noise levels.

Noise generated by small playgrounds typically includes elevated children's voices and occasional adult voices. Based on measurement data obtained from similar land uses, noise levels associated with small playgrounds can generate intermittent noise levels of approximately 55-60 dBA L_{eq} at 50 feet. Based on these noise levels and assuming a distance of approximately 20 feet from the source center to the nearest property line with existing noise barriers, predicted average-hourly noise levels at the nearest adjacent residential property lines could reach levels of up to 63 dBA $L_{eq.}$ Based on this noise level and assuming an average usage rate of 4 hours during the daytime hours, predicted average-daily noise levels at the property line of the nearest residences would be approximately 59 dBA CNEL, or less. The proposed playground would not result in a significant increase in ambient noise levels that would exceed the City's noise standard of 60 dBA CNEL at residential land uses located adjacent to the proposed playground. Noise generated by the proposed playground would be considered to have a less-than-*significant* impact.

Vehicle Parking Areas

The proposed project would include construction of a small parking lot at the southern boundary of the project site, along Falcon Drive. The parking lot would contain approximately 22 spaces. Parking lot noise levels were calculated based on the Federal Transit Administration's Transit *Noise & Vibration Impact Assessment* guidance for the assessment of parking lot-related noise levels. Assuming that all parking spaces would be used within a one-hour period, predicted noise levels at 10 feet from the parking lot would be less than 35 dBA L_{eq}. As previously noted in Table 2, ambient daytime noise levels along Falcon Drive generally range around 43 dBA L_{dn}/CNEL. In comparison to ambient noise levels, the proposed parking lot would not result in a substantial increase in ambient noise levels at nearby receptors. Noise generated by the proposed parking area would be considered to have a *less-than-significant* impact.

Long-term Increases in Traffic Noise

Ambient noise levels in the project area are predominantly influenced by vehicular traffic on area roadways. The FHWA roadway noise prediction model was used to predict traffic noise levels along primarily affected roadway segments. Predicted noise levels were calculated for baseline conditions, with and without implementation of the proposed project, based on traffic volumes obtained from the traffic analysis prepared for this project. Predicted increases in traffic noise levels are summarized in Table 7.

As noted in Table 7, implementation of the proposed project would result in increases of approximately 1.6 dBA L_{dn}/CNEL, or less, along area roadways. Implementation of the proposed project would not result in a noticeable increase (i.e., 3 dBA or greater) in ambient noise levels. Increases in traffic noise would be considered to have a *less-than-significant* impact.

Table 7
Predicted Changes in Traffic Noise Levels

Roadway Segment	Predicted Noise Level at 50 ft from Centerline of Near Travel Lane (dBA Ldn/CNEL)[1]			
	Without Project	With Project	Difference	Significant? [2]
Existing Conditions				
Buckhorn Drive, South of Sanborn Road	52.4	54.0	1.6	No
Buckhorn Drive, North of Falcon Drive	50.2	50.8	0.6	No
Falcon Drive, East of Buckhorn Drive	50.6	51.4	0.7	No
Future Cumulative Year 2040 Conditions				
Buckhorn Drive, South of Sanborn Road	53.2	53.7	0.4	No
Buckhorn Drive, North of Falcon Drive	50.9	51.4	0.5	No
Falcon Drive, East of Buckhorn Drive	51.3	51.9	0.6	No

1. Traffic noise levels were predicted using the FHWA roadway noise prediction model based on traffic information obtained from the traffic analysis prepared for this project (JLB 2019). Modeled estimates assume no natural or man-made shielding (e.g., vegetation, berms, walls, buildings).

2. A significant increase is defined as a noticeable increase of 3 dBA, or greater.

Impact Summary

Implementation of the proposed project would not result in significant increases in noise levels at nearby residential land uses associated with the long-term operation of building equipment, use of the onsite playground, vehicle use within onsite parking lots, or vehicle traffic along area roadways. As a result, noise generated by long-term operations would be considered to have a *less-than-significant* impact.

Impact Noise-B: Would the project result in the generation of excessive groundborne vibration or groundborne noise levels?

Long-term operational activities associated with the proposed project would not involve the use of any equipment or processes that would result in potentially significant levels of ground vibration. Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Construction activities associated with the proposed project would likely require the use of various off-road equipment, such as tractors, concrete mixers, and haul trucks. The use of major groundborne vibration-generating construction equipment, such as pile drivers, would not be required for this project.

Groundborne vibration levels associated with representative construction equipment are summarized in Table 8. As depicted, ground vibration generated by construction equipment would be approximately 0.08 in/sec ppv, or less, at 25 feet. Predicted vibration levels at the nearest existing structures would not exceed the minimum recommended criteria for structural damage and human annoyance (0.2 in/sec ppv, respectively). As a result, this impact would be considered *less than significant*.

Table 8
Representative Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity at 25 Feet (In/Sec)
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozers/Tractors	0.003
Source: FTA 2006, Caltrans 2004	

Impact Noise-C: Would the project be 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?

The nearest airport is the Salinas Municipal Airport located approximately 2 miles southwest of the project site. The project site is not located within the projected 60 dBA CNEL contour of this airport. No private airstrips are located within two miles of the project site. For these reasons, this impact is considered *less than significant*.

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APPENDIX A

NOISE PREDICTION MODELING & MONITORING DATA

Traffic Distribution Percentages

Autos	97.42
MD Vehicles	1.84
HD Vehicles	0.74

Traffic Volumes

Roadway Segment	Existing without Project	Existing with Project	Future Cumulative Year 2040 without Project	Future Cumulative Year 2040 with Project
Buckhorn Drive, South of Sanborn Road	1460	2130	1780	1970
Buckhorn Drive, North of Falcon Drive	880	1020	1050	1180
Falcon Drive, East of Buckhorn Drive	980	1160	1150	1330

Summary of Predicted Traffic Noise Levels

	Traffic Noise Level (dBA CNEL) at 50 feet from Near-Travel-Lane Centerline					
Roadway Segment	Existing without Project	Existing with Project	Change	Future Cumulative Year 2040 without Project	Future Cumulative Year 2040 with Project	Change
Buckhorn Drive, South of Sanborn Road	52.37	54.01	1.64	53.23	53.67	0.44
Buckhorn Drive, North of Falcon Drive	50.17	50.81	0.64	50.94	51.44	0.5
Falcon Drive, East of Buckhorn Drive	50.64	51.37	0.73	51.33	51.93	0.6

*Based on an average vehicle speed of 25 mph.

*Projected 60 CNEL contour does not extend beyond the roadway right of way.

Traffic Noise Levels

Existing without Project

ROADWAY SEGMENT	NOISE LEVEL				
	CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
Buckhorn Drive, South of Sanborn Road	52.4	WR	WR	WR	WR
Buckhorn Drive, North of Falcon Drive	50.2	WR	WR	WR	WR
Falcon Drive, East of Buckhorn Drive	50.6	WR	WR	WR	WR

Existing with Project

ROADWAY SEGMENT	NOISE LEVEL				
	CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
Buckhorn Drive, South of Sanborn Road	54.0	WR	WR	WR	WR
Buckhorn Drive, North of Falcon Drive	50.8	WR	WR	WR	WR
Falcon Drive, East of Buckhorn Drive	51.4	WR	WR	WR	WR

Future Cumulative without Project

ROADWAY SEGMENT	NOISE LEVEL				
	CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
Buckhorn Drive, South of Sanborn Road	53.2	WR	WR	WR	WR
Buckhorn Drive, North of Falcon Drive	50.9	WR	WR	WR	WR
Falcon Drive, East of Buckhorn Drive	51.3	WR	WR	WR	WR

Future Cumulative with Project

ROADWAY SEGMENT	NOISE LEVEL				
	CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
Buckhorn Drive, South of Sanborn Road	53.7	WR	WR	WR	WR
Buckhorn Drive, North of Falcon Drive	51.4	WR	WR	WR	WR
Falcon Drive, East of Buckhorn Drive	51.9	WR	WR	WR	WR

AMBIENT
AIR QUALITY & NOISE CONSULTING

NOISE MEASUREMENT SURVEY FORM

DATE: 12-Dec-18
PROJECT: SALINAS CHILD DEV CENTER

NOISE MONITORING LOCATION: SALINAS

LOCATIONS ARE APPROXIMATE

MET CONDITIONS: TEMP: 55 F. HUMIDITY: 70-80 % WIND SPEED: 0-5 MPH SKY: CLEAR GROUND: DRY
NOISE MONITORING EQUIPMENT: LARSON DAVIS MODEL 820, TYPE I SLM
CALIBRATED PRIOR TO AND UPON COMPLETION OF MEASUREMENTS: YES

			NOISE LEVEL			
LOCATION	**MONITORING PERIOD**	**NOISE SOURCES NOTED**	**LEQ**	**LMAX**		**NOTES**
1	0945-0955	BUCKHORN DRIVE NEAR BISON WAY, ~35 FT FROM ROAD CENTERLINE	44.2	54.8		VEHICLE PASSBYS, CHILDREN PLAYING IN DISTANCE
2	1010-1020	FALCON DRIVE, ~25 FT FROM ROAD CENTERLINE	42.7	56.3		VEHICLE PASSBYS, CHILDREN PLAYING IN DISTANCE
3	1030-1040	FALCON DRIVE, ~35 FT FROM ROAD CENTERLINE	43.4	56.1		VEHICLE PASSBYS, CHILDREN PLAYING IN DISTANCE

Appendix F

Traffic Impact Analysis

Administrative Draft Traffic Impact Analysis

Buckhorn Early Learning Center

Located on the Northeast Corner of Buckhorn Drive and Falcon Drive

In the City of Salinas, California

Prepared for:

Alisal Union School District
155 Bardin Road
Salinas, CA 93905

March 25, 2019

Project No. 027-002

JLB Traffic Engineering, Inc.

Traffic Engineering, Transportation Planning, & Parking Solutions
1300 E. Shaw Ave., Ste. 103
Fresno, CA 93710
Phone: (559) 570-8991
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JLB Traffic Engineering, Inc.

Traffic Engineering, Transportation Planning, & Parking Solutions

Administrative Draft Traffic Impact Analysis

For Buckhorn Early Learning Center Located on the Northeast Corner of Buckhorn Drive and Falcon Drive

In the City of Salinas, CA

March 25, 2019

This Administrative Draft Traffic Impact Analysis has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data from which recommendations, conclusions, and decisions are based.

Prepared by:

____

Jose Luis Benavides, PE, TE

President

REGISTERED PROFESSIONAL ENGINEER
JOSE LUIS BENAVIDES
No.T 2328
Exp:06/30/19
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STATE OF CALIFORNIA

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Introduction and Summary

Introduction

This report describes a Traffic Impact Analysis (TIA) prepared by JLB Traffic Engineering, Inc. (JLB) for the proposed Alisal Union School District (District) Buckhorn Early Learning Center (Project) located at the northeast corner of Buckhorn Drive and Falcon Drive in the City of Salinas. The Project proposes to construct a one-story 8,200 square-foot building housing five (5) classrooms, play areas with appropriate play structures, and a 22-stall parking lot on a 0.8-acre parcel. The Project is estimated to serve up to 90 preschool-aged children and employ 15 faculty members. Figure 1 shows the location of the proposed Project site relative to the surrounding roadway network.

The purpose of the TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures, and identify any critical traffic issues that should be addressed in the on-going planning process. The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. The Scope of Work was prepared via consultation with City of Salinas, County of Monterey and Caltrans staff.

Summary

The potential traffic impacts of the proposed Project were evaluated in accordance with the standards set forth by the Level of Service (LOS) policy of the City of Salinas, County of Monterey and Caltrans.

Existing Traffic Conditions

- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- A review of the Project driveways to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- To improve on-site and off-site circulation, it is recommended that the Project install signage at the exit only Project Driveway to Buckhorn Drive to assist drivers. Such signage could include “DO NOT ENTER” signs (R5-1) on the northern and southern point of the Project Driveway facing northbound toward southbound traffic and southbound toward northbound traffic on Buckhorn Drive.
- Based on JLB's review of the pedestrian travel paths within the Project Site it is recommended that the Project install 4-foot wide walkway in place of the park strip located adjacent to the proposed access to Falcon Drive to the east. In addition, it is recommended that the Project install a minimum 8-foot wide crosswalk at Buckhorn Drive north of Falcon Drive in line with the southern limits of the concrete paving. These on-site improvements will help minimize conflicts between pedestrians and vehicles traveling through the parking lot, thus improving pedestrian safety.
- At buildout, the proposed Project is estimated to generate a maximum of 170 daily trips, 60 AM peak hour trips and 31 PM peak hour trips.
- It is recommended that the Project ensure that there are no obstructions within the corner sight distance of 150 feet greater than two (2) feet above the street grade for vehicles approaching north

and south along Buckhorn Drive at the Project driveway and for vehicles approaching east and west along Falcon Drive at the Project driveway.

- Under this scenario all study intersections are projected to operate at an acceptable LOS during both peak periods.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 1,076 daily trips, 85 AM peak hour trips and 113 PM peak hour trips.
- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that a westbound left-turn lane be added. It should be noted that the recommended improvement is projected to be needed with or without the Project. Additional details as to the recommended improvements for this intersection are presented later in this report.

Cumulative Year 2040 No Project Traffic Conditions

- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that a westbound left-turn lane be added. Additional details as to the recommended improvements for this intersection are presented later in this report.

Cumulative Year 2040 plus Project Traffic Conditions

- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that a westbound left-turn lane be added. Additional details as to the recommended improvements for this intersection are presented later in this report.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute its equitable fair share for those portions of the recommended mitigation measures not fully funded by existing funding sources as listed in Table IX for the future improvements necessary to maintain an acceptable LOS.

Scope of Work

The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. On December 7, 2018, a Draft Scope of Work for the preparation of a Traffic Impact Analysis for this Project was provided to the City of Salinas, County of Monterey and Caltrans for their review and comment. Any comments to the proposed Scope of Work were to be provided by December 28, 2018.

On December 28, 2018, the Caltrans responded to the Draft Scope of Work. Caltrans requested that the intersection of US 101 and South Sanborn Road be included in the analysis. Additionally, Caltrans requested that the trip generation for the Project be determined using land use 565 for Day Care Center. On December 28, 2018, the City of Salinas responded to the Draft Scope of Work. The City of Salinas requested that 1) the Cumulative Year be changed to 2040, 2) the intersections of Freedom Parkway and Sanborn Road, Boronda Road and Sanborn Road, Elk Drive and Falcon Drive and Buckhorn Drive and Project Driveway be included in the analysis, 3) pedestrian counts be included at the intersections of Buckhorn Drive and Sanborn Road, Buckhorn Drive and Falcon Drive, Freedom Parkway and Sanborn Road, and Elk Drive and Falcon Drive, 4) the TIA identify and/or provide pedestrian path of travel from the sidewalks to destinations on site so as to minimize conflicts with vehicles traveling through the parking lot, 5) the TIA determine school zone signing and marking needs in accordance with the CA MUTCD, 6) the TIA determine appropriate sightline clearance at driveways and requirements to remove parking, 7) the TIA consult the Salinas Crosswalk Policy for any recommended crossings and 8) the TIA consult the Salinas Traffic Calming Policy for traffic calming measures. Since the County of Monterey did not respond to the Draft Scope of Work, it was assumed that proposed Scope of Work was acceptable to this agency.

While Caltrans requested that the intersection of US 101 and Sanborn Road be included in the analysis, JLB determined that this intersection would not be significantly impacted by the Project. Additionally, JLB did not change the land use from Elementary School to Day Care Center, especially since the Project will operate as a normal school's starting and ending hours.

JLB prepared the Project’s anticipated trip distribution to surrounding facilities based on existing travel patterns, data provided by the District, the existing roadway network, engineering judgement, existing residential densities, and the City of Salinas 2002 General Plan Circulation Element in the vicinity of the Project. Based on the Project’s anticipated trip distribution, the comments received and consultation with the District, it was JLB determined that intersections projected to observe less than 10 peak hour Project trips would not be impacted by the Project and therefore were not included in the analysis. Thus, the intersections of Boronda Road and Sanborn Road, Elk Drive and Falcon Drive and Boronda Road and Falcon Drive were not included in the analysis. With this in mind, the study intersections included in the analysis were the intersections of Buckhorn Drive and Sanborn Road, Buckhorn Drive and Falcon Drive, Freedom Parkway and Cougar Drive as presented in the Draft Scope of Work and the intersections of Freedom Parkway and Sanborn Road and Buckhorn Drive and Project Driveway as requested by the City of Salinas.

In addition, this TIA considers the Cumulative Year to be the year 2040 as requested by the City of Salinas. Furthermore, this TIA includes the collection of pedestrian counts at all study facilities and identifies a pedestrian path of travel from the sidewalks to destinations on site. This TIA also considers the CA MUTCD for implementation of recommended school zone signage and markings, the Salinas Crosswalk Policy for implementation of recommended crossings, and the Salinas Traffic Calming Policy for implementation of recommended traffic calming measures. Finally, JLB consulted with the City of Salinas to determine the average annual growth rate to be utilized to arrive at future volume projections. The City of Salinas approved the utilization of a 1.3 percent average annual growth rate. The Draft Scope of Work and the comments received from the lead agency and responsible agencies are included in Appendix A.

Study Facilities

The existing peak hour turning movement volume counts were conducted at the study intersections in June 2018, while schools in the vicinity of the proposed Project were in session. The intersection turning movement counts included pedestrian volumes. The traffic counts for the existing study intersections are contained in Appendix B. The existing intersection turning movement volumes, intersection geometrics and traffic controls are illustrated in Figure 2.

Study Intersections

1. Freedom Parkway / Sanborn Road
2. Buckhorn Drive / Sanborn Road
3. Buckhorn Drive / Project Driveway
4. Buckhorn Drive / Falcon Drive
5. Freedom Parkway / Cougar Drive

Study Scenarios

Existing Traffic Conditions

This scenario evaluates the Existing Traffic Conditions based on existing traffic volumes and roadway conditions from traffic counts and field surveys conducted in 2018.

Existing plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Existing plus Project Traffic Conditions. The Existing plus Project traffic volumes were obtained by adding the Project Only Trips to the Existing Traffic Conditions scenario. The Project Only Trips to the study facilities were developed based on existing travel patterns, the existing roadway network, engineering judgment, data provided by the District, knowledge of the study area, existing residential, and the City of Salinas 2002 General Plan Circulation Element in the vicinity of the Project.

Near Term plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Near Term plus Project Traffic Conditions. The Near Term plus Project traffic volumes were obtained by adding the Near Term related trips to the Existing plus Project Traffic Conditions scenario.

Cumulative Year 2040 No Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2040 No Project Traffic Conditions. The Cumulative Year 2040 No Project traffic volumes were obtained by subtracting the Project Only Trips from the Cumulative Year 2040 plus Project Traffic Conditions scenario.

Cumulative Year 2040 plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2040 plus Project Traffic Conditions. Per consultation with the City of Salinas, JLB utilized an average annual growth rate of 1.3 percent, which approximates the growth assumptions of the City of Salinas Economic Development Element, which is an approved update to the City's General Plan. This growth rate was used to expand existing 2018 volumes by 22 years to arrive at the Cumulative Year 2040 plus Project traffic volumes.

Level of Service Analysis Methodology

Level of Service (LOS) is a qualitative index of the performance of an element of the transportation system. LOS is a rating scale running from "A" to "F", with "A" indicating no congestion of any kind and "F" indicating unacceptable congestion and delays. LOS in this study describes the operating conditions for signalized and unsignalized intersections.

The *Highway Capacity Manual* (HCM) is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. Synchro software was used to define LOS in this study. Details regarding these calculations are included in Appendix C.

Criteria of Significance

The City of Salinas 2002 General Plan Circulation Element TIA has established LOS D or better for all intersections and roadways. As all study facilities fall within the City of Salinas, LOS D is used to evaluate the potential significance of LOS impacts to intersections and segments within this TIA pursuant to the City of Salinas 2002 General Plan.

The County of Monterey has established LOS D as the acceptable level of traffic congestion on county roads and streets that fall entirely outside the Sphere of Influence (SOI) of a City. For those areas that fall within the SOI of a City, the LOS criteria of the City are the criteria of significance used in this report. LOS D is used to evaluate the potential significance of LOS impacts to Monterey County intersections that fall outside the City of Salinas SOI. In this case, all study facilities fall within the City of Salinas SOI, therefore, the City of Salinas LOS is utilized.

Caltrans endeavors to maintain a target LOS at the transition between LOS C and D on State highway facilities consistent with the *Caltrans Guide for the Preparation of Traffic Impact Studies* dated December 2002. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. In this TIA, however, all study facilities fall within the City of Salinas. Therefore, the City of Salinas LOS thresholds are utilized.

Operational Analysis Assumptions and Defaults

The following operational analysis values, assumptions and defaults were used in this study to ensure a consistent analysis of LOS among the various scenarios.

- Yellow time consistent with the California Manual of Uniform Traffic Control Devices (CA MUTCD) based on approach speeds
- Yellow time of 3.2 seconds for left-turn phases
- All-red clearance intervals of 1.0 second for all phases
- Walk intervals of 7.0 seconds
- Flashing Don't Walk based on 3.5 feet/second walking speed with yellow plus all-red clearance subtracted and 2.0 seconds added
- All new or modified signals utilize protective left-turn phasing
- A 1 percent heavy vehicle factor
- The number of observed pedestrians at existing intersections was utilized under all study scenarios
- An average of 10 pedestrian calls per hour at the intersection of Freedom Parkway and Sanborn Road
- At existing intersections, the observed approach Peak Hour Factor (PHF) is utilized in the Existing, Existing plus Project, and Near Term plus Project scenarios.
- Under the Existing plus Project and Near Term plus Project Traffic Conditions scenarios, the following PHFs were utilized at the intersection of Buckhorn Drive and Project Driveway to reflect school traffic operations.
  - A PHF of 0.71 is utilized during the AM peak
  - A PHF of 0.80 is utilized during the PM peak
- For the Cumulative Year 2040 scenarios, the following PHF's were utilized to reflect school traffic operations and an increase in future traffic volumes. As roadways start to reach their saturated flow rates, PHF's tend to increase to 0.90 or higher. The PHF's were established based engineering judgement, knowledge of the study area, and historical traffic counts collected by JLB for intersections in proximity of school sites.
  - For the intersections of Freedom Parkway and Sanborn Road, Buckhorn Drive and Sanborn Road, and Freedom Parkway and Cougar Drive, the following PHF's were utilized:
    - A PHF of 0.86, or the existing PHF if higher, is utilized during the AM peak
    - A PHF of 0.90, or the existing PHF if higher, is utilized during the PM peak
  - For the intersections of Buckhorn Drive and Project Driveway and Buckhorn Drive and Falcon Drive, the following PHF's were utilized:
    - A PHF of 0.72, or the existing PHF if higher, is utilized during the AM peak
    - A PHF of 0.82, or the existing PHF if higher, is utilized during the PM peak

Existing Traffic Conditions

Roadway Network

The Project site and surrounding study area are illustrated in Figure 1. Important roadways serving the Project are discussed below.

Freedom Parkway is an existing northwest-southeast four-lane divided arterial in the vicinity of the proposed Project. In this area, Freedom Parkway extends southeast of Constitution Boulevard as a four-lane divided arterial before terminating at Padova Drive. The City of Salinas 2002 General Plan Circulation Element designates Freedom Parkway as a four-lane minor arterial between Constitution Boulevard and Sconeberg Parkway Avenue.

Sanborn Road is an existing northeast-southwest four-lane arterial in the vicinity of the proposed Project. Sanborn Road is a four-lane divided arterial between Abbott Street and Alisal Street, a four-lane arterial divided by a two-way left-turn lane between Alisal Street and Madeira Avenue, a four-lane divided arterial between Madeira Avenue and Garner Avenue, a four-lane arterial between Garner Avenue and Antigua Avenue, and a four-lane divided arterial between Antigua Avenue and Boronda Road. The City of Salinas 2002 General Plan Circulation Element designates Sanborn Road as a major arterial between Abbott Street and Del Monte Avenue, a minor arterial between Del Monte Avenue and Boronda Road, and as a four-lane major arterial between Boronda Road and Old Stage Road.

Buckhorn Drive is an existing northwest-southeast two-lane collector adjacent to the proposed Project. In this area, Buckhorn Drive exists between Madrone Drive and Falcon Drive. The City of Salinas 2002 General Plan Circulation Element designates Buckhorn Drive as a collector between Madrone Drive and Falcon Drive.

Falcon Drive is an existing northeast-southwest two-lane minor arterial adjacent to the proposed Project. In this area, Fallbrook Avenue exists between Bison Way and Boronda Road. The City of Salinas 2002 General Plan Circulation Element designates Falcon Drive as a two-lane minor arterial between Buckhorn Drive and Boronda Road.

Cougar Drive is an existing northeast-southwest two-lane collector in the vicinity of the proposed Project. In this area, Cougar Drive exists between Gaviota Drive and Antelope Drive. The City of Salinas 2002 General Plan Circulation Element designates Cougar Drive as a two-lane collector between Gaviota Drive and Elk Drive.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing Traffic Conditions scenario. These warrants are found in Appendix I. These warrants were prepared pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized intersections satisfy the peak hour signal warrant during either peak period.

Results of Existing Level of Service Analysis

Figure 2 illustrates the Existing Traffic Conditions turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing Traffic Conditions scenario are provided in Appendix D. Table I presents a summary of the Existing peak hour LOS at the study intersections.

At present, all study intersections operate at an acceptable LOS during both peak periods.

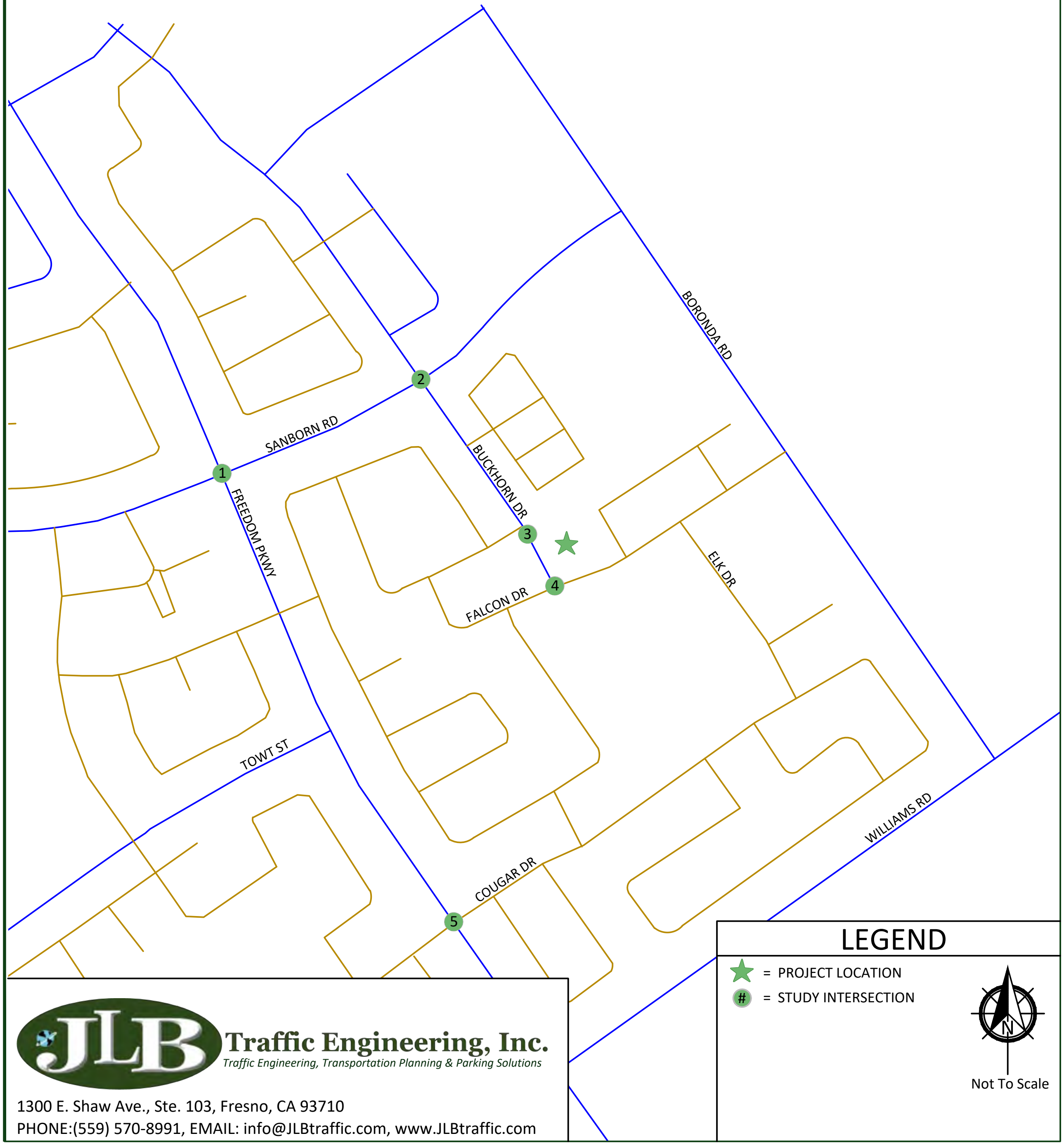
Table I: Existing Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*(7-9) AM Peak Hour*		*(2-4) PM Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Freedom Parkway / Sanborn Road	Signalized	18.0	B	17.2	B
2	Buckhorn Drive / Sanborn Road	Two-Way Stop	16.5	C	15.8	C
3	Buckhorn Drive / Project Driveway	Does Not Exist	N/A	N/A	N/A	N/A
4	Buckhorn Drive / Falcon Drive	One-Way Stop	11.1	B	9.2	A
5	Freedom Parkway / Cougar Drive	Two-Way Stop	29.1	D	15.8	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Buckhorn Early Learning Center - City of Salinas
Vicinity Map

Figure 1



LEGEND

★ = PROJECT LOCATION

● = STUDY INTERSECTION

Not To Scale

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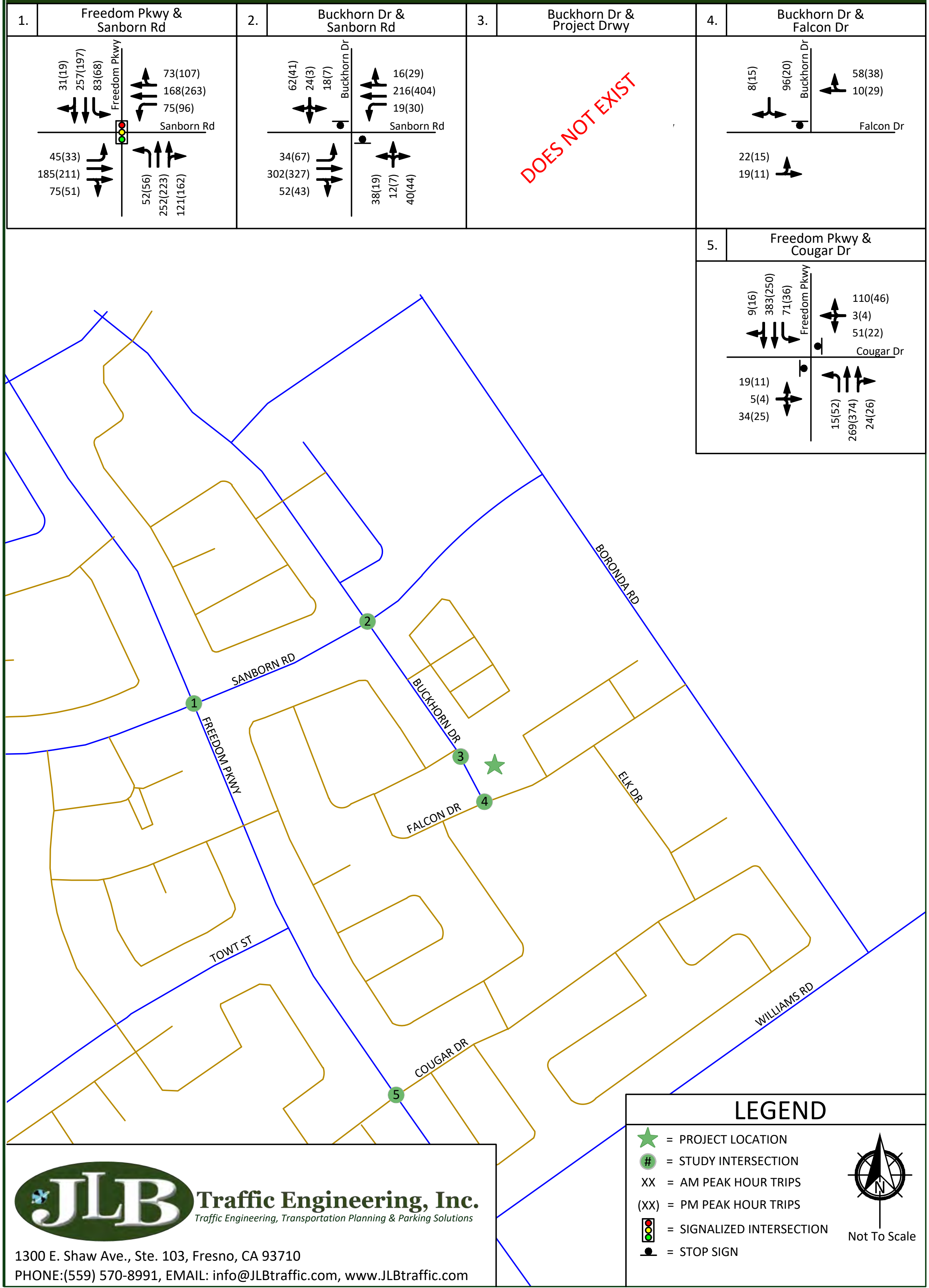
Buckhorn Early Learning Center - City of Salinas
Existing - Traffic Volumes, Geometrics and Controls

Figure 2



LEGEND

★ = PROJECT LOCATION
\# = STUDY INTERSECTION
XX = AM PEAK HOUR TRIPS
(XX) = PM PEAK HOUR TRIPS
🚦 = SIGNALIZED INTERSECTION
● = STOP SIGN

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Existing plus Project Traffic Conditions

Project Description

The Project proposes to construct a one-story 8,200 square-foot building housing five (5) classrooms, play areas with appropriate play structures, and a 22-stall parking lot on a 0.8-acre parcel. The Project is estimated to serve up to 90 preschool-aged children and employ 15 faculty members. Figure 3 illustrates the latest Project Site Plan.

Project Access

Based on the latest Project Site Plan, access to the proposed Project site will be from two (2) points. One access point is located along the north side of Falcon Drive approximately 125 feet east of Buckhorn Drive and is proposed as a full access, while the other access point is located along the east side of Buckhorn Drive approximately 175 feet north of Falcon Drive and is proposed as an exit only access (Project Driveway). JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project driveways to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network. However, to further improve on-site and off-site circulation, it is recommended that the Project install signage at the intersection of Buckhorn Drive and Project Driveway to assist drivers. Such signage could include "DO NOT ENTER" signs (R5-1) on the northern and southern point of the Project Driveway facing northbound toward southbound traffic and southbound toward northbound traffic on Buckhorn Drive.

JLB also analyzed pedestrian travel paths within the Project Site from sidewalks to destinations on-site. Based on this review it is recommended that the Project install a minimum 4-foot wide walkway in place of the park strip located adjacent to the proposed access to Falcon Drive to the east. In addition, it is recommended that the Project install a minimum 8-foot wide crosswalk at Buckhorn Drive north of Falcon Drive in line with the southern limits of the concrete paving. These on-site improvements will help minimize conflicts between pedestrians and vehicles traveling through the parking lot, thus improving pedestrian safety.

Trip Generation

Trip generation rates for the proposed Project at buildout were obtained from the 10th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table II presents the trip generation for the proposed Project with trip generation rates for Elementary School. At buildout, the proposed Project is estimated to generate a maximum of 170 daily trips, 60 AM peak hour trips and 31 PM peak hour trips.

Table II: Proposed Project Trip Generation

Land Use (ITE Code)	***Size***	***Unit***	***Daily***		***AM Peak Hour***						***PM Peak Hour***					
			Rate	***Total***	***Trip Rate***	***In***	***Out***	***In***	***Out***	***Total***	***Trip Rate***	***In***	***Out***	***In***	***Out***	***Total***
						%						***%***				
Elementary School (520)	90	students	1.89	170	0.67	54	46	32	28	60	0.34	45	55	14	17	31
Total Project Trips				**170**				**32**	**28**	**60**				**14**	**17**	**31**

Trip Distribution

The trip distribution assumptions were developed based on existing travel patterns, the existing roadway network, engineering judgment, data provided by the District, knowledge of the study area, existing residential densities, and the City of Salinas 2002 General Plan Circulation Element in the vicinity of the Project. Figure 4 illustrates the Project Only Trips to the study intersections.

Bikeways

Currently, Class II Bike Lanes exist in the vicinity of the proposed Project site along Freedom Parkway and Sanborn Road. The City of Salinas Economic Development Element recommends that Class II Bike Lanes remain on Freedom Parkway between Constitution Boulevard and Williams Road and Sanborn Road between Del Monte Avenue and Boronda Road.

Walkways

Currently, walkways exist adjacent to the proposed Project along Buckhorn Drive and Falcon Drive with one exception. As part of the Project, walkways should be constructed along the Project's frontage to Buckhorn Drive and Falcon Drive where they are lacking. Where possible, walkways should be a minimum of six (6) feet wide and be separated from the street by a park strip to provide some separation between pedestrians and the paved portions of the road. It is also recommended that high visibility crosswalks be installed across the south leg of the intersection of Buckhorn Drive at Bison Way and across the north leg of the intersection of Buckhorn Drive at Falcon Drive. Furthermore, it is recommended that the existing high visibility crosswalk across the west leg of the intersection of Falcon Drive at Buckhorn Drive be restriped pursuant to the City of Salinas Crosswalk Policy and the CA MUTCD Chapter 3B - Pavement and Curb Markings. Additionally, it is recommended that Project install school zone signage pursuant to CA MUTCD Chapter 7B – Signs.

JLB acknowledges that parking is prohibited along the west side of Buckhorn Drive near Falcon Drive as well as along the north and south sides of Falcon Drive near Buckhorn Drive. Therefore, to continue the effort to improve pedestrian safety, it is recommended that parking be prohibited for a length of 25 feet from the north end of the curb return at northeast corner of Buckhorn Drive and Falcon Drive to the north along the east side of Buckhorn Drive and 25 feet to the east along the north side of Falcon Drive. It is also recommended that parking be prohibited for a length of 25 feet from the proposed crosswalk across the south leg of Buckhorn Drive at Bison Way to the north and 75 feet to the south along the east side of Buckhorn Drive.

Transit

The Monterey-Salinas Transit is the transit operator in the City of Salinas. At present, Route 95 (Williams Ranch-Northridge) operates in the vicinity of the proposed Project. Route 95 operates at 30-minute intervals on weekdays and weekends and its nearest stop to the Project site is located along the east side of Buckhorn Drive approximately 100 feet northwest of Sanborn Road. This route provides a direct connection to Natividad Medical Center, Northridge Mall, Regency Circle, Department of Motor Vehicles, Salinas Sports Complex, Salinas Transit Center, Salinas Valley Memorial Hospital, Blanco Circle and Alisal

Shopping Center. Retention of the existing and expansion of future transit routes is dependent on transit ridership demand and available funding.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing plus Project Traffic Conditions scenario. These warrants are found in Appendix I. These warrants were prepared pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized intersections are projected to satisfy the peak hour signal warrant during either peak period.

Corner Sight Distance

A qualitative corner sight distance (CSD) evaluation was conducted for the Project driveways at Buckhorn Drive and Falcon Drive pursuant to the guidelines within the Highway Design Manual (HDM). The purpose of the CSD evaluation is to ensure that the appropriate line of sight is not obstructed for traffic on the Project driveways wishing to enter Buckhorn Drive and Falcon Drive respectively. Based on the HDM, at private driveways, “the minimum Corner Sight Distance shall be equal to the stopping sight distance given in Table 201.1.” Since the posted speed limit for Buckhorn Drive and Falcon Drive is 25 MPH in all directions, the posted speed limit of 25 mph should be used as the critical speed. Per the HDM, a critical speed of 25 mph recommends a corner sight distance of 150 feet. Therefore, it is recommended that the Project ensure the appropriate line of sight for the Project driveways at Buckhorn Drive and Falcon Drive. More specifically, the Project shall ensure that there are no obstructions greater than two (2) feet above the street grade for vehicles approaching north and south along Buckhorn Drive at the Project driveway. Similarly, the Project shall ensure that there are no obstructions greater than two (2) feet above the street grade for vehicles approaching east and west along Falcon Drive at the Project driveway.

Results of Existing plus Project Level of Service Analysis

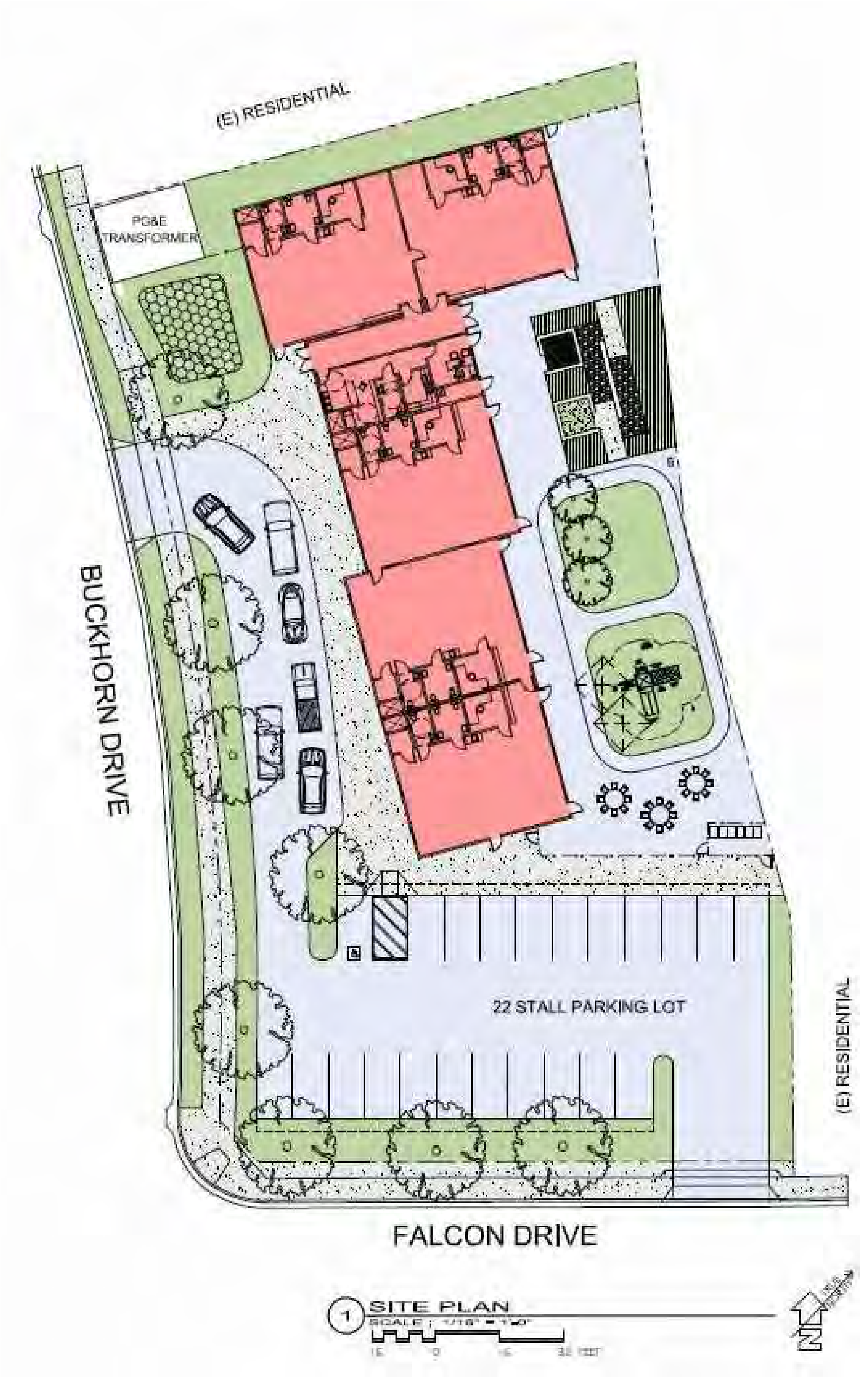
The Existing plus Project Traffic Conditions scenario assumes the same roadway geometrics and traffic controls as those assumed in the Existing Traffic Conditions scenario. Figure 5 illustrates the Existing plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing plus Project Traffic Conditions scenario are provided in Appendix E. Table III presents a summary of the Existing plus Project peak hour LOS at the study intersections.

Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Table III: Existing plus Project Intersection LOS Results

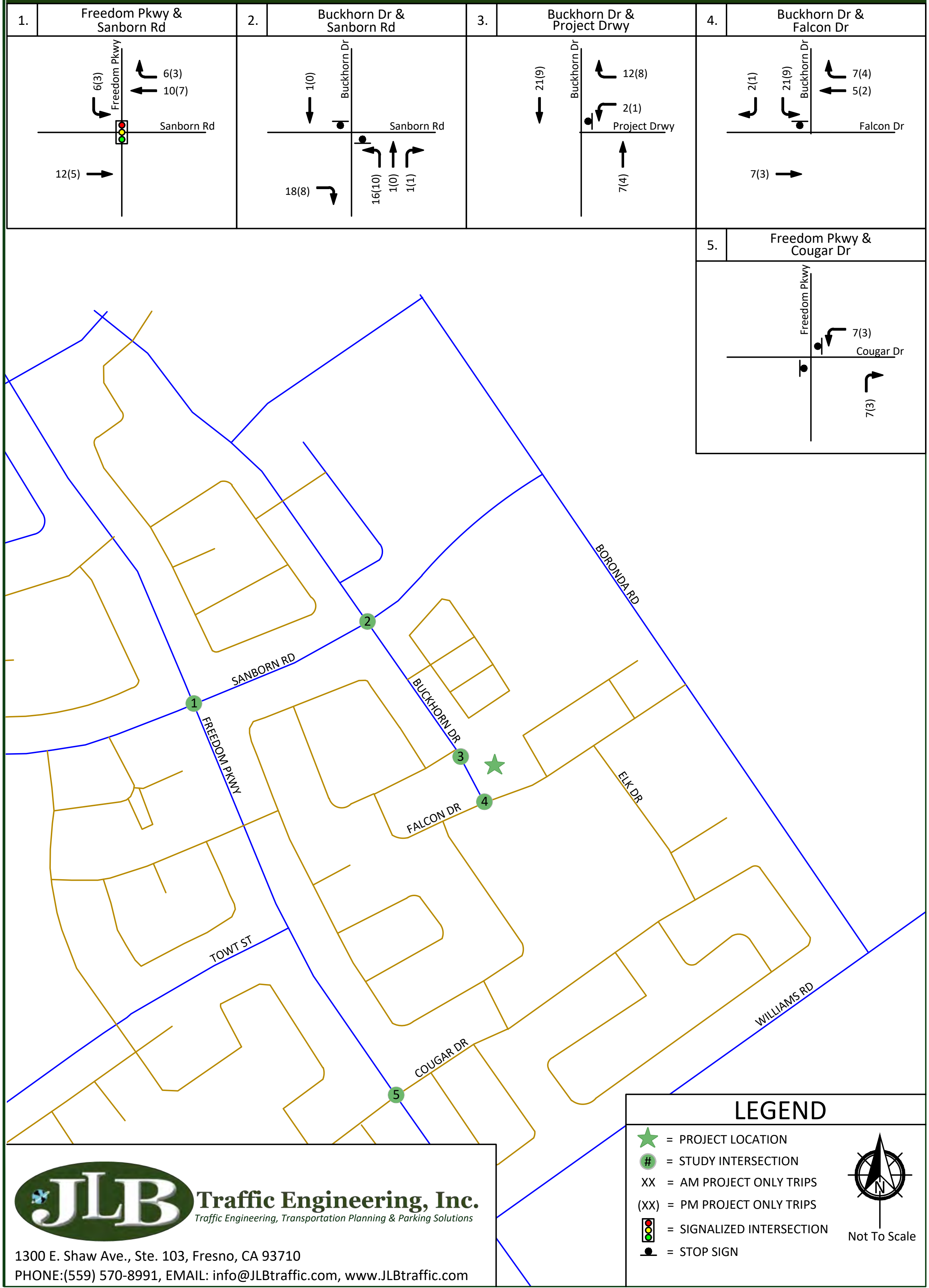
ID	*Intersection*	*Intersection Control*	*(7-9) AM Peak Hour*		*(2-4) PM Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Freedom Parkway / Sanborn Road	Signalized	18.3	B	17.3	B
2	Buckhorn Drive / Sanborn Road	Two-Way Stop	18.6	C	17.6	C
3	Buckhorn Drive / Project Driveway	One-Way Stop	9.2	A	8.7	A
4	Buckhorn Drive / Falcon Drive	One-Way Stop	11.8	B	9.4	A
5	Freedom Parkway / Cougar Drive	Two-Way Stop	34.0	D	16.4	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.


(E) RESIDENTIAL
PG&E TRANSFORMER
BUCKHORN DRIVE
22 STALL PARKING LOT
(E) RESIDENTIAL
FALCON DRIVE
1
SITE PLAN
SCALE : 1/16" = 1'-0"
16 0 16 32 FEET
N

Buckhorn Early Learning Center - City of Salinas
Project Only Trips

Figure 4



LEGEND

★ = PROJECT LOCATION
● = STUDY INTERSECTION
XX = AM PROJECT ONLY TRIPS
(XX) = PM PROJECT ONLY TRIPS
🚦 = SIGNALIZED INTERSECTION
● = STOP SIGN

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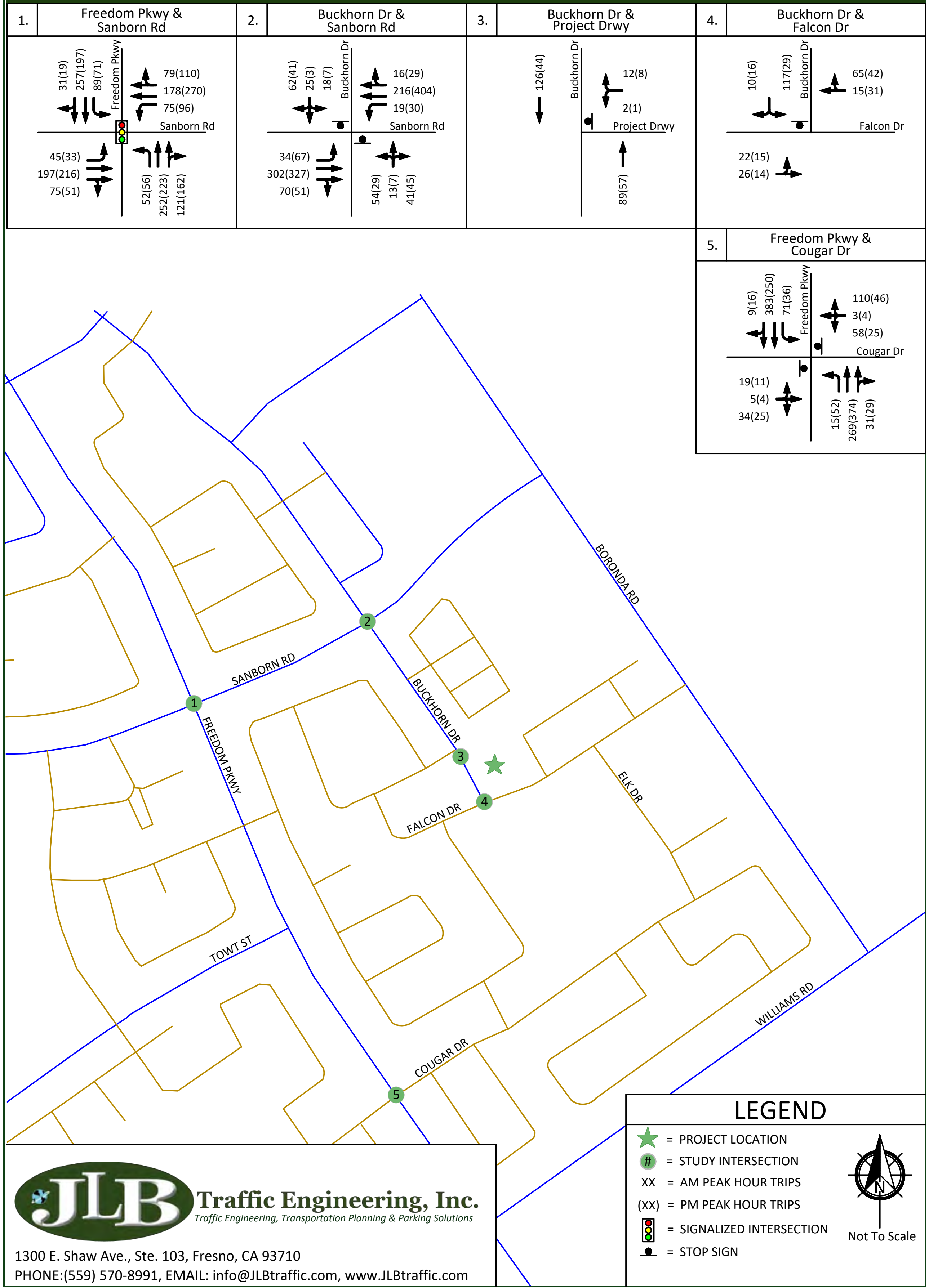
Buckhorn Early Learning Center - City of Salinas
Existing plus Project - Traffic Volumes, Geometrics and Controls

Figure 5



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Near Term plus Project Traffic Conditions

Description of Approved and Pipeline Projects

Approved and Pipeline Projects consist of developments that are either under construction, built but not fully occupied, are not built but have final site development review (SDR) approval, or for which the lead agency or responsible agencies have knowledge of. The City of Salinas, County of Monterey and Caltrans staff were consulted throughout the preparation of this TIA regarding approved and/or known projects that could potentially impact the study intersections. JLB staff conducted a reconnaissance of the surrounding area to confirm the Near Term Projects. Subsequently, it was agreed that the projects listed in Table IV were approved, near approval, or in the pipeline within the proximity of the proposed Project.

The trip generation listed in Table IV is that which is anticipated to be added to the streets and highways by these projects between the time of the preparation of this report and five years after buildout of the proposed Project. As shown in Table IV, the total trip generation for the Near Term Projects is 1,076 daily trips, 85 AM peak hour trips and 113 PM peak hour trips. Figure 6 illustrates the location of the approved, near approval, or pipeline projects and their combined trip assignment to the study intersections and segments under the Near Term plus Project Traffic Conditions scenario.

Table IV: Near Term Projects' Trip Generation

Approved Project Location	*Approved or Pipeline Project Name*	*Daily Trips*	*AM Peak Hour*	*PM Peak Hour*
A	Tierra at Monte Bella[1]	406	32	43
B	Monte Bella[1]	670	53	70
Total Approved and Pipeline Project Trips		**1,076**	**85**	**113**

Note: 1 = Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Near Term plus Project Traffic Conditions scenario. These warrants are found in Appendix I. These warrants were prepared pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized intersections are projected to satisfy the peak hour signal warrant during either peak period.

Results of Near Term plus Project Level of Service Analysis

The Near Term plus Project Traffic Conditions scenario assumes the same roadway geometrics and traffic controls as those assumed in the Existing Traffic Conditions scenario. Figure 7 illustrates the Near Term plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Near Term plus Project Traffic Conditions scenario are provided in Appendix F. Table V presents a summary of the Near Term plus Project peak hour LOS at the study intersections.

Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. It should be noted that the recommended improvement is projected to be needed with or without the Project. To improve the LOS at this intersection, it is recommended that the following improvements be implemented.

- Freedom Parkway / Cougar Drive
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane.

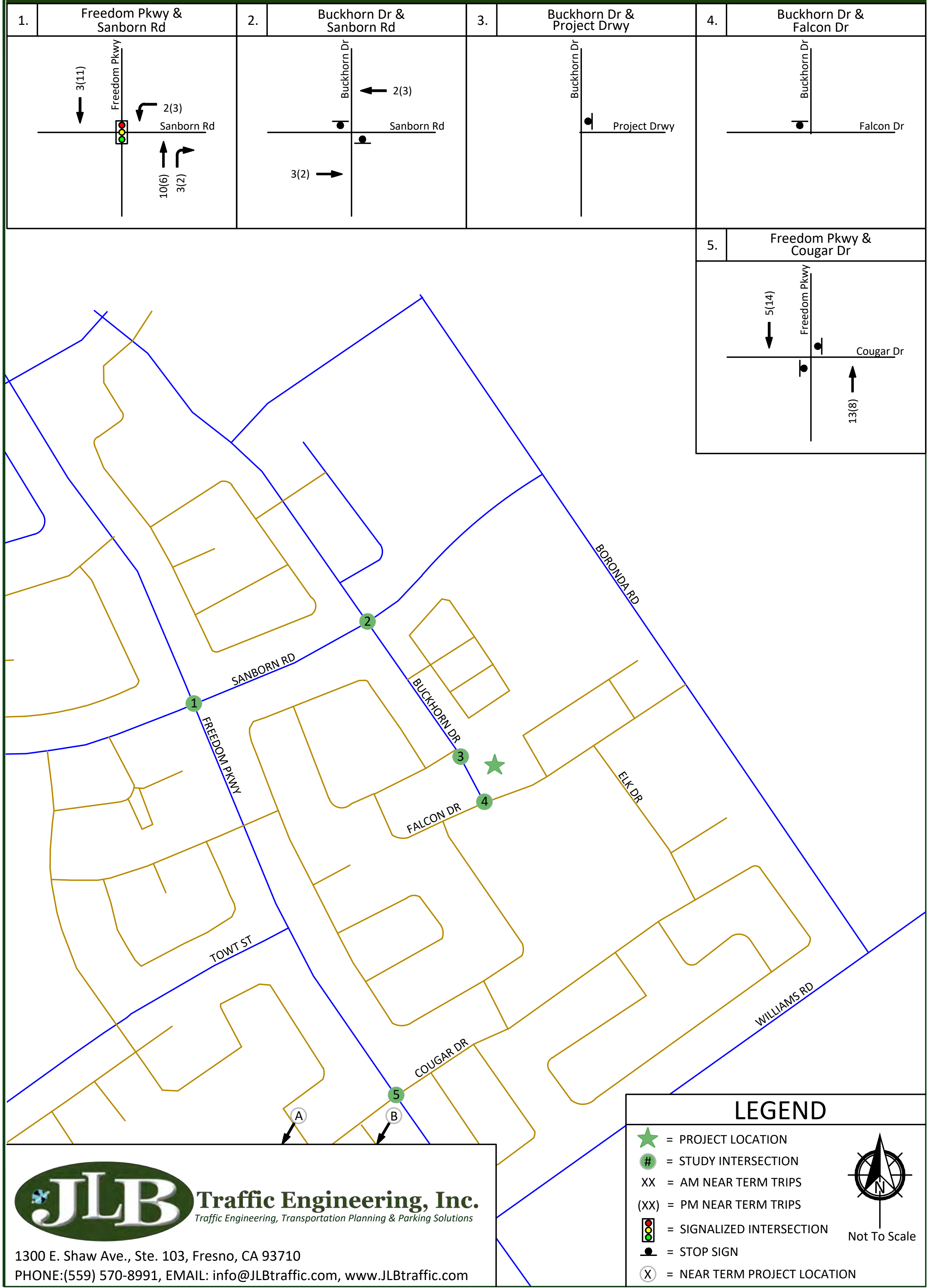
Table V: Near Term plus Project Intersection LOS Results

ID	***Intersection***	***Intersection Control***	***(7-9) AM Peak Hour***		***(2-4) PM Peak Hour***	
			Average Delay (sec/veh)	***LOS***	***Average Delay (sec/veh)***	***LOS***
1	Freedom Parkway / Sanborn Road	Signalized	18.4	B	17.4	B
2	Buckhorn Drive / Sanborn Road	Two-Way Stop	18.8	C	17.7	C
3	Buckhorn Drive / Project Driveway	One-Way Stop	9.2	A	8.7	A
4	Buckhorn Drive / Falcon Drive	One-Way Stop	11.8	B	9.4	A
5	Freedom Parkway / Cougar Drive	Two-Way Stop	**36.3**	**E**	16.7	C
		(Mitigated)	24.9	C	15.3	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Buckhorn Early Learning Center - City of Salinas
Near Term Projects' Trip Assignment

Figure 6



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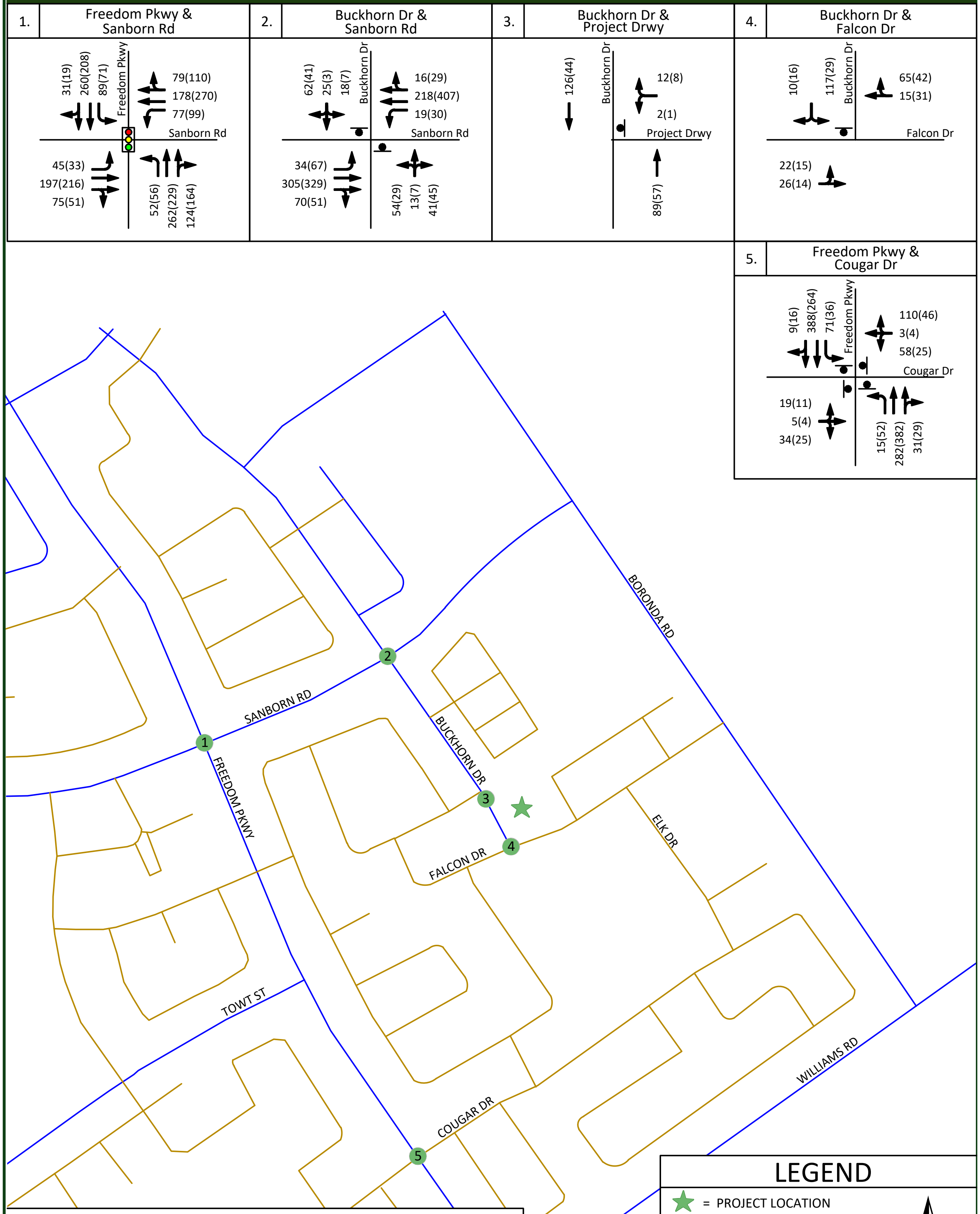
Buckhorn Early Learning Center - City of Salinas

Near Term plus Project - Traffic Volumes, Geometrics and Controls

Figure 7



LEGEND

★ = PROJECT LOCATION
# = STUDY INTERSECTION
XX = AM PEAK HOUR TRIPS
(XX) = PM PEAK HOUR TRIPS
🚦 = SIGNALIZED INTERSECTION
● = STOP SIGN

N
Not To Scale

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Cumulative Year 2040 No Project Traffic Conditions

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2040 No Project Traffic Conditions scenario. These warrants are found in Appendix I. These warrants were prepared pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized intersections are projected to satisfy the peak hour signal warrant during either peak period.

Results of Cumulative Year 2040 No Project Level of Service Analysis

The Cumulative Year 2040 No Project Traffic Conditions scenario assumes the same roadway geometrics and traffic controls as those assumed in the Existing Traffic Conditions scenario. Figure 8 illustrates the Cumulative Year 2040 No Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2040 No Project Traffic Conditions scenario are provided in Appendix G. Table VI presents a summary of the Cumulative Year 2040 No Project peak hour LOS at the study intersections.

Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvements be implemented.

- Freedom Parkway / Cougar Drive
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane.

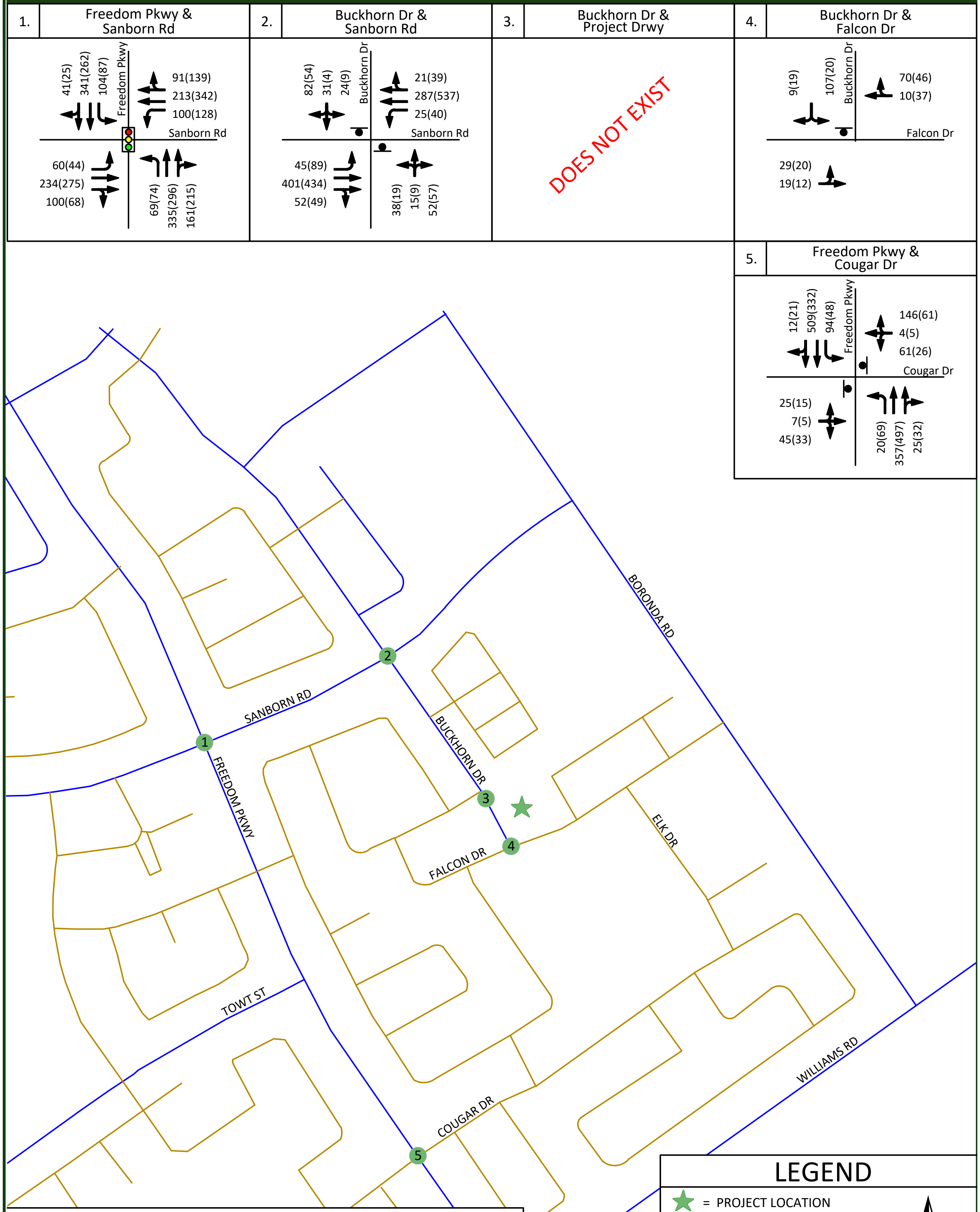
Table VI: Cumulative Year 2040 No Project Intersection LOS Results

ID	***Intersection***	***Intersection Control***	***(7-9) AM Peak Hour***		***(2-4) PM Peak Hour***	
			Average Delay (sec/veh)	***LOS***	***Average Delay (sec/veh)***	***LOS***
1	Freedom Parkway / Sanborn Road	Signalized	21.4	C	20.1	C
2	Buckhorn Drive / Sanborn Road	Two-Way Stop	23.0	C	22.9	C
3	Buckhorn Drive / Project Driveway	Does Not Exist	N/A	N/A	N/A	N/A
4	Buckhorn Drive / Falcon Drive	One-Way Stop	11.6	B	9.4	A
5	Freedom Parkway / Cougar Drive	Two-Way Stop	**40.5**	**E**	22.3	C
		Two-Way Stop (Improved)	31.8	D	19.0	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Buckhorn Early Learning Center - City of Salinas
Cumulative Year 2040 No Project - Traffic Volumes, Geometrics and Controls

Figure 8



LEGEND

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Cumulative Year 2040 plus Project Traffic Conditions

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2040 No Project Traffic Conditions scenario. These warrants are found in Appendix I. These warrants were prepared pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized intersections are projected to satisfy the peak hour signal warrant during either peak period.

Results of Cumulative Year 2040 plus Project Level of Service Analysis

The Cumulative Year 2040 plus Project Traffic Conditions scenario assumes the same roadway geometrics and traffic controls as those assumed in the Existing Traffic Conditions scenario. Figure 9 illustrates the Cumulative Year 2040 plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2040 plus Project Traffic Conditions scenario are provided in Appendix H. Table VII presents a summary of the Cumulative Year 2040 plus Project peak hour LOS at the study intersections.

Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvements be implemented.

- Freedom Parkway / Cougar Drive
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane.

Table VII: Cumulative Year 2040 plus Project Intersection LOS Results

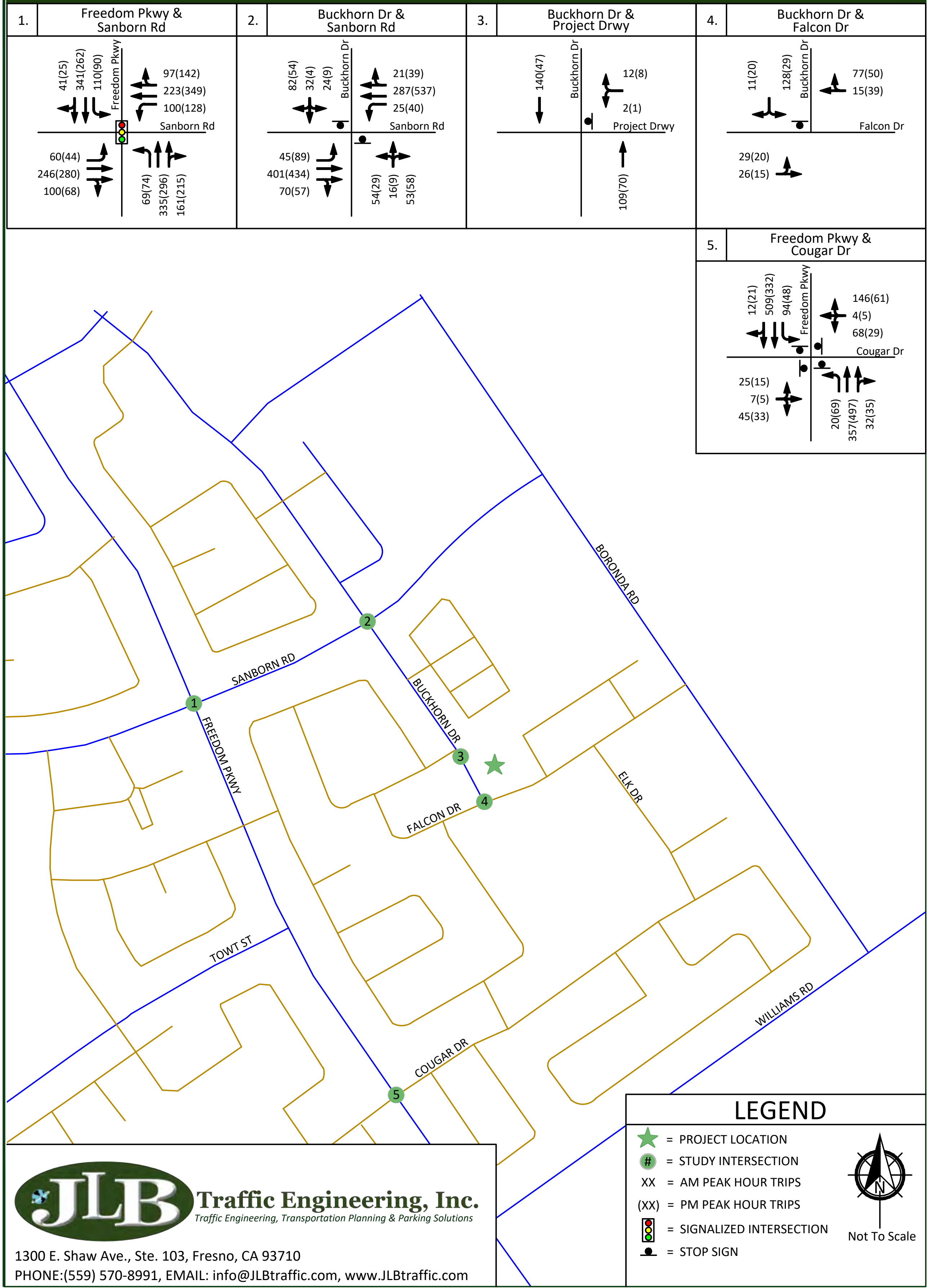
ID	*Intersection*	*Intersection Control*	*(7-9) AM Peak Hour*		*(2-4) PM Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Freedom Parkway / Sanborn Road	Signalized	21.8	C	20.3	C
2	Buckhorn Drive / Sanborn Road	Two-Way Stop	28.5	D	27.4	D
3	Buckhorn Drive / Project Driveway	One-Way Stop	9.3	A	8.8	A
4	Buckhorn Drive / Falcon Drive	One-Way Stop	12.3	B	9.5	A
5	Freedom Parkway / Cougar Drive	Two-Way Stop	**48.6**	**E**	23.6	C
		(Mitigated)	32.0	D	19.8	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Buckhorn Early Learning Center - City of Salinas

Figure 9

Cumulative Year 2040 plus Project - Traffic Volumes, Geometrics and Controls



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Queuing Analysis

Table VIII provides a queue length summary for left-turn and right-turn lanes at the study intersections under all study scenarios. The queuing analyses for the study intersections are contained in the LOS worksheets for the respective scenarios. Appendix C contains the methodologies used to evaluate these intersections. Queuing analyses were completed using Sim Traffic output information. Synchro provides both 50th and 95th percentile maximum queue lengths (in feet). According to the Synchro manual, “the 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percentile volumes.” The queues shown on Table VIII are the 95th percentile queue lengths for the respective lane movements.

The HDM provides guidance for determining deceleration lengths for the left-turn and right-turn lanes based on design speeds. Per the HDM criteria, “tapers for right-turn lanes are usually un-necessary since the main line traffic need not be shifted laterally to provide space for the right-turn lane. If, in some rare instances, a lateral shift were needed, the approach taper would use the same formula as for a left-turn lane.” Therefore, a bay taper length pursuant to the Caltrans HDM would need to be added, as necessary, to the recommended storage lengths presented in Table VIII.

Based on the SimTraffic output files and engineering judgement, it is recommended that the storage capacity for the following be considered for the Cumulative Year 2040 plus Project Traffic Conditions. At the remaining approaches of the study intersections, the existing storage capacity will be sufficient to accommodate the maximum queue.

- Freedom Parkway / Cougar Drive
    - Consider setting the storage capacity of the westbound left-turn lane between 75 and 100 feet.

Table VIII: Queuing Analysis

ID	Intersection	*Existing Queue Storage Length (ft.)*		*Existing*		*Existing plus Project*		*Near Term plus Project*		*Cumulative Year 2040 No Project*		*Cumulative Year 2040 plus Project*	
				AM	*PM*	*AM*	*PM*	*AM*	*PM*	*AM*	*PM*	*AM*	*PM*
1	Freedom Parkway / Sanborn Road	EB Left	220	51	58	57	63	90	61	95	96	83	70
		WB Left	250	85	118	112	103	101	108	110	159	97	149
		NB Left	230	59	68	63	79	98	84	86	102	77	95
		SB Left	225	123	79	91	83	119	97	120	119	220	109
2	Buckhorn Drive / Sanborn Road	EB Left	185	34	38	35	50	39	56	41	58	42	51
		WB Left	175	31	20	14	29	21	35	25	39	31	38
3	Buckhorn Drive / Project Driveway	WB LR	*	*	*	32	37	27	39	*	*	36	32
5	Freedom Parkway / Cougar Drive	WB Left	*	*	*	*	*	82	46	65	54	92	49
		NB Left	150	27	37	21	34	18	44	29	43	27	42
		SB Left	155	45	13	47	47	47	38	51	44	58	44

Note: * = Does not exist or is not projected to exist

Project’s Pro-Rata Fair Share of Future Transportation Improvements

The Project’s fair share percentage impact to study intersections projected to fall below their LOS threshold is provided in Table IX. The Project’s fair share percentage impacts were calculated pursuant to the Caltrans Guide for the Preparation of Traffic Impact Studies. The Project’s pro-rata fair shares were calculated utilizing the Existing volumes, Project Only Trips and Cumulative Year 2040 plus Project volumes. Figure 2 illustrates the Existing traffic volumes, Figure 4 illustrates the Project Only Trips, and Figure 9 illustrates the Cumulative Year 2040 plus Project traffic volumes. Since the critical peak period for the study facilities was determined to be during the AM peak, the AM peak volumes are utilized to determine the Project’s pro-rata fair share.

It is recommended that the Project contribute its equitable fair share as listed in Table IX for the future improvements necessary to maintain an acceptable LOS. However, fair share contributions should only be made for those facilities, or portion thereof, currently not funded by the responsible agencies roadway impact fee program(s) or grant funded projects, as appropriate. For those improvements not presently covered by local and regional roadway impact fee programs or grant funding, it is recommended that the Project contribute its equitable fair share. Payment of the Project’s equitable fair share in addition to the local and regional impact fee programs would satisfy the Project’s traffic mitigation measures.

This study does not provide construction costs for the recommended mitigation measures; therefore, if the recommended mitigation measures are implemented, it is recommended that the District work with the City of Salinas to develop the estimated construction cost.

Table IX: Project’s Fair Share of Future Roadway Improvements

ID	*Intersection*	*Existing Traffic Volumes (AM Peak)*	*Cumulative Year 2040 plus Project Traffic Volumes (AM Peak)*	*Project Only Trips (AM Peak)*	*Project's Fair Share (%)*
5	Freedom Parkway / Cougar Drive	993	1319	14	4.29

Note: Project Fair Share = ((Project Only Trips) / (Cumulative Year 2040 + Project Traffic Volumes - Existing Traffic Volumes)) x 100

Conclusions and Recommendations

Conclusions and recommendations regarding the proposed Project are presented below.

Existing Traffic Conditions

- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- A review of the Project driveways to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- To improve on-site and off-site circulation, it is recommended that the Project install signage at the exit only Project Driveway to Buckhorn Drive to assist drivers. Such signage could include “DO NOT ENTER” signs (R5-1) on the northern and southern point of the Project Driveway facing northbound toward southbound traffic and southbound toward northbound traffic on Buckhorn Drive.
- Based on JLB's review of the pedestrian travel paths within the Project Site it is recommended that the Project install 4-foot wide walkway in place of the park strip located adjacent to the proposed access to Falcon Drive to the east. In addition, it is recommended that the Project install a minimum 8-foot wide crosswalk at Buckhorn Drive north of Falcon Drive in line with the southern limits of the concrete paving. These on-site improvements will help minimize conflicts between pedestrians and vehicles traveling through the parking lot, thus improving pedestrian safety.
- At buildout, the proposed Project is estimated to generate a maximum of 170 daily trips, 60 AM peak hour trips and 31 PM peak hour trips.
- It is recommended that the Project ensure that there are no obstructions within the corner sight distance of 150 feet greater than two (2) feet above the street grade for vehicles approaching north and south along Buckhorn Drive at the Project driveway and for vehicles approaching east and west along Falcon Drive at the Project driveway.
- Under this scenario all study intersections are projected to operate at an acceptable LOS during both peak periods.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 1,076 daily trips, 85 AM peak hour trips and 113 PM peak hour trips.
- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. It should be noted that the recommended improvement is projected to be needed with or without the Project. To improve the LOS at this intersection, it is recommended that the following improvements be implemented.
    - Freedom Parkway / Cougar Drive
        - Add a westbound left-turn lane;
        - Modify the westbound left-through-right lane to a through-right lane; and
        - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane

Cumulative Year 2040 No Project Traffic Conditions

- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvements be implemented.
  - Freedom Parkway / Cougar Drive
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane.

Cumulative Year 2040 plus Project Traffic Conditions

- Under this scenario, the intersection of Freedom Parkway and Cougar Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvements be implemented.
  - Freedom Parkway / Cougar Drive
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Eliminate curbside parking along the east leg of Cougar Drive as necessary to accommodate that added westbound left-turn lane.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute its equitable fair share for those portions of the recommended mitigation measures not fully funded by existing funding sources as listed in Table IX for the future improvements necessary to maintain an acceptable LOS.

Study Participants

JLB Traffic Engineering, Inc. Personnel:

Jose Luis Benavides, PE, TE	Project Manager
Susana Maciel, EIT	Engineer I/II
Javier Rios	Engineer I/II
Jove Alcazar	Engineer I/II
Matthew Arndt	Engineer I/II
Dennis Wynn	Sr. Engineering Technician

Persons Consulted:

James Serrano, P.E.	City of Salinas
Mohammad Qureshi	County of Monterey
Frank Boyle	Caltrans District 5
Scott B. Odell, AICP	Odell Planning & Research, Inc.

References

1. City of Salinas, *2002 General Plan*
2. City of Salinas, *Economic Development Element TIA*
3. City of Salinas, *General Plan Circulation Element,* dated September 2002
4. City of Salinas, *Neighborhood Traffic Management Program,* dated November 2008
5. City of Salinas, *Crosswalk Policy Guidelines,* December 2017
6. *Guide for the Preparation of Traffic Impact Studies*, Caltrans, dated December 2002.
7. *Trip Generation,* 10th Edition, Washington D.C., Institute of Transportation Engineers, 2017.
8. *2014 California Manual on Uniform Traffic Control Devices*, Caltrans, November 7, 2014.

Appendix A: Scope of Work

December 7, 2018

James Serrano
Transportation Manager
City of Salinas
200 Lincoln Avenue
Salinas, CA 93901

Via E-mail Only: jamess@ci.salinas.ca.us

Subject: ***Draft Scope of Work for the Preparation of a Traffic Impact Analysis for the proposed Buckhorn Early Learning Center Project in the City of Salinas (JLB Project 027-002)***

Dear Mr. Serrano,

JLB Traffic Engineering, Inc. (JLB) hereby submits this Draft Scope of Work for the preparation of a Traffic Impact Analysis (TIA) for the Buckhorn Pre-School (Project) located on the northeast corner of Falcon Drive and Buckhorn Drive in the City of Salinas. The Project proposes to construct a one-story building housing five (5) classrooms, play areas with age-appropriate play structures, and a 20-stall parking lot on a 0.8-acre parcel. The Project is estimated to serve up to 90 preschool children and employ 15 faculty members. An aerial of the Project vicinity is shown in Exhibit A and the Project Site Plan is shown in Exhibit B.

The purpose of this TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures, and identify any critical traffic issues that should be addressed in the on-going planning process. In order to evaluate the on-site and off-site traffic impacts of the proposed Project, JLB proposes the following Scope of Work.

Scope of Work

- To arrive at the Cumulative Year 2035 plus Project traffic forecasting volumes, JLB proposes to utilize an annual growth rate to expand the observed traffic volumes at the study facilities. To determine the annual growth rate, JLB will utilize volume projections readily available from the City of Salinas Sphere of Influence Amendment and Annexation Supplemental TIA, which contains volume projections for portions of the City of Salinas circulation network.
- JLB will evaluate existing and forecast levels of service (LOS) at the study intersection(s). JLB will use HCM 6th Edition methodologies within Synchro to perform this analysis for the AM and PM peak hours. JLB will identify the causes of poor LOS.
- JLB will evaluate existing on-site circulation and provide recommendations, as necessary, to improve circulation to and within the Project site.
- As necessary, JLB will obtain recent traffic counts or schedule and conduct new traffic counts at the study facility(ies). These counts will include pedestrian counts.

- JLB will perform a site visit to observe existing traffic conditions, especially during the AM and PM peak hours. Existing roadway conditions including geometrics and traffic controls will be verified.
- JLB will prepare Peak Hour Signal Warrants per the California Manual on Uniform Traffic Control Devices (CA MUTCD) for un-signalized study intersections.
- JLB will forecast trip distribution based on turn count information, student population densities and the existing circulation network in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned transit routes in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned bikeways in the vicinity of the Project.

Study Scenarios:

1. Existing Traffic Conditions;
2. Existing plus Project Traffic Conditions with proposed mitigation measures (if any);
3. Near Term plus Project (include pending and approved projects) Traffic Conditions with proposed mitigation measures (if any);
4. Cumulative Year 2035 No Project Traffic Conditions with proposed improvement measures (if any); and
5. Cumulative Year 2035 plus Project Traffic Conditions with proposed mitigation measures (if any).

Weekday (Tuesday, Wednesday or Thursday only) hours to be analyzed:

1. 7-9 AM peak hour
2. 2-4 PM peak hour (to coincide with the school's peak traffic activities)

Since this is a school project, JLB proposes to analyze the PM peak hour of the generator (between 2-4 PM).

Study Intersections:

1. Sanborn Road / Buckhorn Drive
2. Falcon Drive / Buckhorn Drive
3. Falcon Drive / Boronda Road
4. Cougar Drive / Freedom Parkway

Sim Traffic queuing analysis is included in the proposed Scope of Work for the study intersection(s) listed above under all study scenarios. This analysis will be utilized to recommend minimum storage lengths for left-turn and right-turn lanes at all study intersections.

Study Segments (Normal Weekday):

1. None

Trip Generation

Table I provides the trip generation for the proposed Project during normal weekday operations pursuant to the 10th Edition of the Trip Generation Manual with trip generation rates for Elementary School. At build-out, the Project is estimated to generate a maximum of 170 daily trips, 60 AM peak hour trips and 31 PM peak hour trips.

Table I: Normal Weekday – Project Only Trip Generation

Land Use (ITE Code)	*Size*	*Unit*	*Daily*		*AM Peak Hour*						*PM Peak Hour*					
			Rate	*Total*	*Trip Rate*	*In*	*Out*	*In*	*Out*	*Total*	*Trip Rate*	*In*	*Out*	*In*	*Out*	*Total*
						%						*%*				
Elementary School (520)	90	students	1.89	170	0.67	54	46	32	28	60	0.34	45	55	14	17	31
Total Project Trips				**170**				**32**	**28**	**60**				**14**	**17**	**31**

Near Term Projects to be Included

JLB is unaware of other projects in the vicinity of the proposed Project that have the ability to impact traffic operations in the Near Term and Cumulative Year plus Project scenarios. However, JLB will include in the Near Term plus Project scenario near term projects provided to us by other responsible agencies. These would include Near Term Projects the City of Salinas, County of Monterey or Caltrans has knowledge of and for which it is anticipated that said project(s) is/are projected to be whole or partially built by the Near Term Project Year, and for which the City of Salinas, County of Monterey or Caltrans, as appropriate, provides JLB with near term project details. Near term project details include project description, location, proposed land uses with breakdowns and type of residential units and amount of square footages for non-residential uses.

The Draft Scope of Work is based on our understanding of this Project and our experience with similar Traffic Impact Analysis projects. In the absence of comments by December 28, 2018, it will be assumed that the Draft Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

Please feel welcome to contact me if you have any questions or require any additional information. I can be reached by phone at (559) 317-6273 or by e-mail at smaciel@JLBtraffic.com.

Sincerely,

Susana Maciel

Susana Maciel, EIT

cc: Mohammad Qureshi, County of Monterey
Frank Boyle, Caltrans District 5
Scott Odell, Odell Planning & Research, Inc.
Jose Luis Benavides, JLB Traffic Engineering, Inc.

Z:\01 Projects\027 Salinas\027-002 Blackburn TIA\Draft Scope of Work\L12072018 Draft Scope of Work.docx

Exhibt A – Project Site

Exhibt B – Project Site Plan

Susana Maciel

From: James Serrano <jamess@ci.salinas.ca.us>
Sent: Friday, December 28, 2018 4:35 PM
To: Susana Maciel
Cc: Jose Benavides; Andrew Easterling; Thomas Wiles
Subject: RE: Buckhorn Early Learning Center: TIA Draft Scope of Work
Attachments: L12072018 Draft Scope of Work.pdf

Ms. Maciel

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1. Growth Projection. Please discuss with City staff. The City will want to have the Cumulative Year be at 2040.
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6. Determine school zone signing and marking needs in accordance with the CA MUTCD.
7. Determine appropriate sightline clearance at driveways and requirements to remove parking.
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https://www.cityofsalinas.org/our-city-services/public-works/traffic-transportation-engineering/policies

As for City projects that are in the planning process, the City plans to construct roundabouts at intersections along Boronda Road from McKinnon Street to Independence Boulevard.

Please let me know if there are questions.

James Serrano |
Public Works Department
City of Salinas |
200 Lincoln Avenue |
Salinas, CA 93901 |
☎: 831.758-7195 | 🖷: 831.758-7935 | ✉: jamess@ci.salinas.ca.us

---

From: Susana Maciel [mailto:smaciel@jlbtraffic.com]
Sent: Thursday, December 13, 2018 2:47 PM
To: James Serrano <jamess@ci.salinas.ca.us>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>
Subject: Buckhorn Early Learning Center: TIA Draft Scope of Work

Good afternoon Mr. Serrano,

I hope you're having a great week.

I just wanted to follow up with you on your review of the Draft Scope of Work for this Project. I am happy to answer any questions you may have or discuss any concerns pertaining to our proposed Scope of Work. Please let me know if I can be of any assistance in your review.

If possible, I would like to know when can I expect to hear back from you.

Thanks so much for your time.

Best,

Susana Maciel, EIT
Engineer I/II

JLB Traffic Engineering, Inc.

Traffic Engineering, Transportation Planning and Parking Solutions
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Fresno, CA 93710
Direct: (559) 317-6273
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Cell: (559) 232-9474
www.JLBtraffic.com

From: Susana Maciel
Sent: Friday, December 07, 2018 8:37 AM
To: jamess@ci.salinas.ca.us
Cc: 'mq@co.monterey.ca.us' <mq@co.monterey.ca.us>; frank_boyle@dot.ca.gov; Scott Odell (scott@odellplanning.com) <scott@odellplanning.com>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: Buckhorn Early Learning Center: TIA Draft Scope of Work

Good morning Mr. Serrano,

I hope you're day is off to a great start!

Attached you will find a Draft Scope of Work for a Traffic Impact Analysis for the Buckhorn Early Learning Center Project in the City of Salinas. I would like to note that this Project was known as the Buckhorn Pre-School Project. The new Draft Scope of Work is reflective of the changes to the Project Description – namely the reduction in the estimated maximum number of students served and the number of proposed classrooms.

With that said, I kindly ask that you take a moment to review and comment on the proposed Scope of Work. In the absence of comments by December 28, 2018, it will be assumed that the Scope of Work presented is acceptable to the agency(ies) that have not submitted any comments. Please feel welcome to contact me if you have any questions or require any additional information. I can be reached by phone at 559.317.6273 or by email at smaciel@jlbtraffic.com.

I appreciate your time and attention to this matter and look forward to hearing from you soon. Have a great weekend!

Best,

Susana Maciel, EIT
Engineer I/II

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STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711
http://www.dot.ca.gov/dist05/

Serious drought
Help save water!

December 28, 2018

MON-101-85.902

Susana Maciel
JLB Traffic Engineering, Inc.
1300 E. Shaw Ave., Ste. 103
Fresno, CA 93710

COMMENTS FOR THE FOR THE PREPARATION OF A TRAFFIC IMPACT ANALYSIS (TIA) SCOPE OF WORK - BUCKHORN EARLY LEARNING CENTER, SALINAS, CA

The California Department of Transportation (Caltrans), District 5, Development Review, has reviewed the proposed TIA Scope of Work for Buckhorn Early Learning Center which proposes to construct a one-story building on a 0.8-acre parcel. Caltrans offers the following comments in response:

General Comments

1. Caltrans supports local planning efforts that are consistent with State planning priorities intended to promote equity, strengthen the economy, protect the environment, and promote public health and safety. We accomplish this by working with local jurisdictions to achieve a shared vision of how the transportation system should and can accommodate inter-regional and local travel.

2. Projects that support smart growth principles which include improvements to pedestrian, bicycle, and transit infrastructure (or other key Transportation Demand Strategies) are supported by Caltrans and are consistent with our mission, vision, and goals.

3. At any time during the environmental review and approval process, Caltrans retains the statutory right to request a formal scoping meeting to resolve any issues of concern. Such formal scoping meeting requests are allowed per the provisions of the California Public Resources Code Section 21083.9 [a] [l).

4. The traffic study should include information on existing volumes within the study area, including the State transportation system, and should be based on recent traffic volumes less than two years old. Counts older than two years cannot be used as a baseline.

Specific Comments

1. If not included in a city impact fee program or Transportation Agency for Monterey County (TAMC) Regional Program, study intersections should include the US 101 and South Sanborn Road interchanges to determine impacts, if any.

2. Trip Generation Land Use Code should not be Elementary School; this project more closely matches Land Use 565 – Day Care Center. Please include the building square footage to compare the trips generated by students vs. square feet.

3. The peak hour factor should be used for trip generation.

4. A trip distribution map should be included in the draft for comment.

Thank you for the opportunity to review and comment on the proposed project. If you have any questions, or need further clarification on items discussed above, please contact me at (805) 549-3157 or email christopher.bjornstad@dot.ca.gov.

Sincerely,
Chris Bjornstad

Chris Bjornstad
Transportation Planner
District 5

cc: James Serrano (City of Salinas)

Susana Maciel

From: James Serrano <jamess@ci.salinas.ca.us>
Sent: Friday, February 08, 2019 2:24 PM
To: Susana Maciel
Cc: Andrew Easterling
Subject: RE: Buckhorn Early Learning Center: Average Annual Growth Rate

Ms. Maciel:

Thank you for your patience. You may use the 1.3% growth rate which approximates the growth assumptions of the EDE. Furthermore, please use the rate to arrive at a Cumulative Year 2045 scenario to be consistent with the EDE assumptions. The EDE is now an approved update to the General Plan.

Thank you.

James Serrano |
Public Works Department
City of Salinas |
200 Lincoln Avenue |
Salinas, CA 93901 |
☎: 831.758-7195 | 🖷: 831.758-7935 | ✉: jamess@ci.salinas.ca.us

---

From: Susana Maciel [mailto:smaciel@jlbtraffic.com]
Sent: Monday, February 04, 2019 9:30 AM
To: James Serrano <jamess@ci.salinas.ca.us>
Subject: Buckhorn Early Learning Center: Average Annual Growth Rate

Good morning Mr. Serrano,

I hope you had a great weekend!

This is just a follow-up on my previous email regarding the 1.5 percent average annual growth rate that we propose to utilize to arrive at the Cumulative Year 2040 traffic forecasting volumes.

I look forward to hearing from you soon.

Best,

Susana Maciel, EIT
Engineer I/II

JLB Traffic Engineering, Inc.

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From: Susana Maciel
Sent: Wednesday, January 23, 2019 5:26 PM
To: jamess@ci.salinas.ca.us
Cc: Jose Benavides <jbenavides@jlbtraffic.com>
Subject: Buckhorn Early Learning Center: Average Annual Growth Rate

Good afternoon Mr. Serrano,

I am reaching out to you to get your input/approval on the average annual growth rate percentage that we plan to utilize to arrive at the Cumulative Year 2040 traffic forecasting volumes.

Based on the City of Salinas Economic Development Element Draft TIA prepared by Fehr & Peers for the City of Salinas dated August 31, 2017, the average annual growth rate in the vicinity of the Project site is presented in the table below. As can be seen from the table, the average annual growth rate among the roadway segments in the vicinity of the Project site was found to be 1.0 percent. However, in order to be conservative, JLB proposes to utilize the highest average annual growth rate – 1.5 percent.

Segment	Limits	Base Year 2016 Segment Volumes	Cumulative Year 2045 No Project Segment Volumes
		Total	Total
Boronda Rd	Constitution Blvd to Sanborn Rd	14499	22860
Sanborn Rd	Laurel Dr to Boronda Rd	12789	14000
Williams Rd	Laurel Dr to Boronda Rd	12362	18110
			Average Grow

It is worth noting that the average annual growth rate of 1.5 percent is higher than that assumed in the Draft Program EIR for the City of Salinas Economic Development Element prepared by EMC Planning Group, Inc. for the City of Salinas dated September 1, 2017 which assumed an average annual growth rate of 1.25 percent.

With the above in mind, JLB proposed to expand observed traffic volumes at the study intersections by an average annual growth rate of 1.5 percent to arrive at the Cumulative Year 2040 traffic forecasting volumes. Please confirm whether the City approves the use of an average annual growth rate of 1.5 percent or if the City suggests that we use a different average annual growth rate.

I appreciate your time and look forward to hearing from you soon.

Best,

Susana Maciel, EIT
Engineer I/II

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To: Susana Maciel <smaciel@jlbtraffic.com>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>; Andrew Easterling <andrewe@ci.salinas.ca.us>; Thomas Wiles <thomaswi@ci.salinas.ca.us>
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Please let me know if there are questions.

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If possible, I would like to know when can I expect to hear back from you.

Thanks so much for your time.

Best,

Susana Maciel, EIT
Engineer I/II

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Appendix B: Traffic Counts

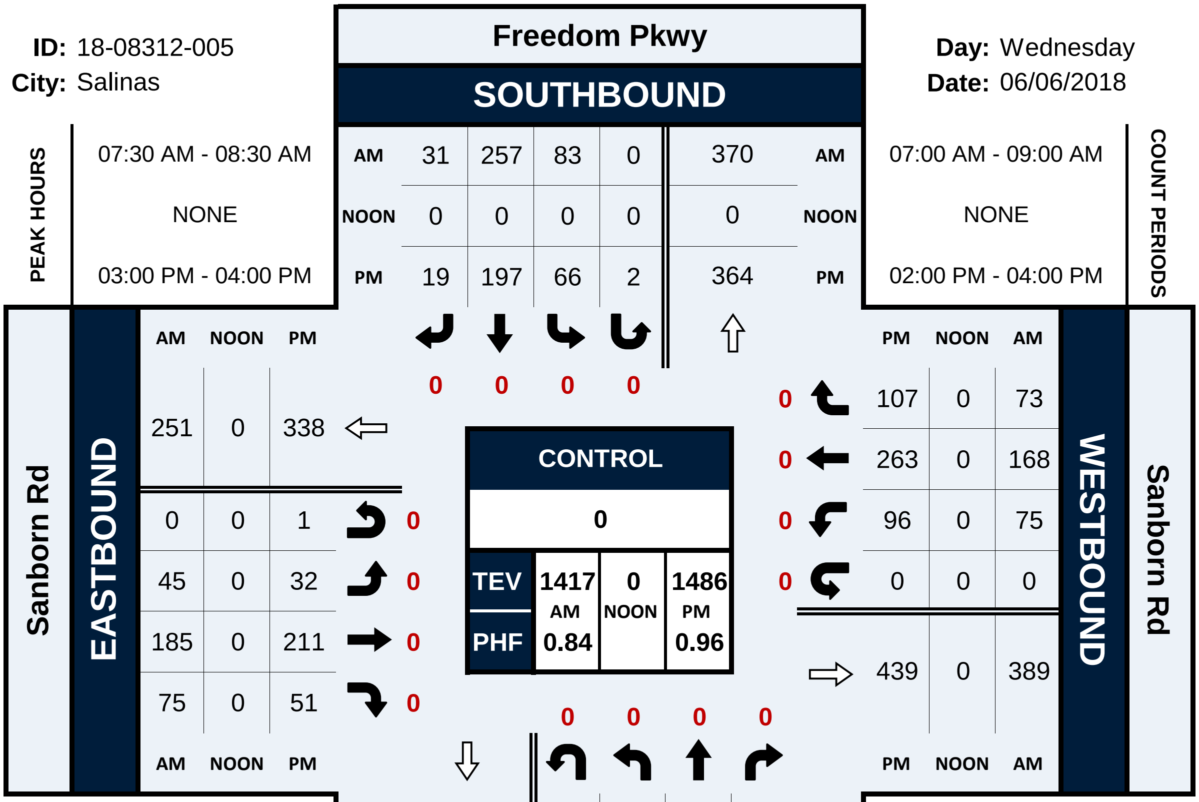
Prepared by National Data & Surveying Services

Freedom Pkwy & Sanborn Rd

Peak Hour Turning Movement Count

ID: 18-08312-005
City: Salinas

Day: Wednesday
Date: 06/06/2018



PEAK HOURS	07:30 AM - 08:30 AM
	NONE
	03:00 PM - 04:00 PM

COUNT PERIODS	07:00 AM - 09:00 AM
	NONE
	02:00 PM - 04:00 PM

Freedom Pkwy

SOUTHBOUND

AM	31	257	83	0	370
NOON	0	0	0	0	0
PM	19	197	66	2	364
	0	0	0	0	

Sanborn Rd

EASTBOUND

AM	NOON	PM	
251	0	338	
0	0	1	0
45	0	32	0
185	0	211	0
75	0	51	0
AM	NOON	PM	

Sanborn Rd

WESTBOUND

	PM	NOON	AM
0	107	0	73
0	263	0	168
0	96	0	75
0	0	0	0
	439	0	389
	PM	NOON	AM

CONTROL

0

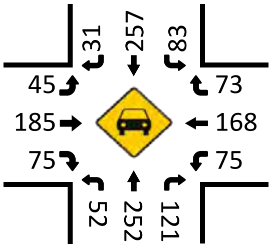
TEV	1417 AM	0 NOON	1486 PM
PHF	0.84		0.96

		0	0	0	0	
PM	345	1	55	223	162	PM
NOON	0	0	0	0	0	NOON
AM	407	0	52	252	121	AM

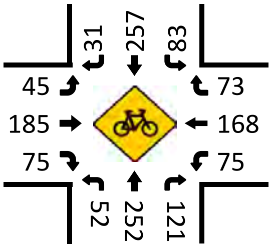
NORTHBOUND

Freedom Pkwy

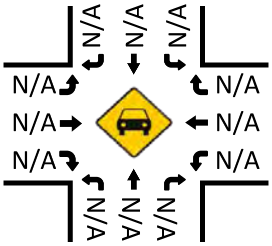
Total Vehicles (AM)



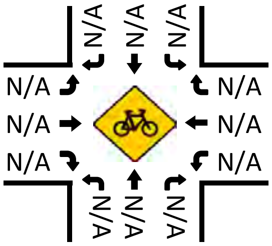
(AM)



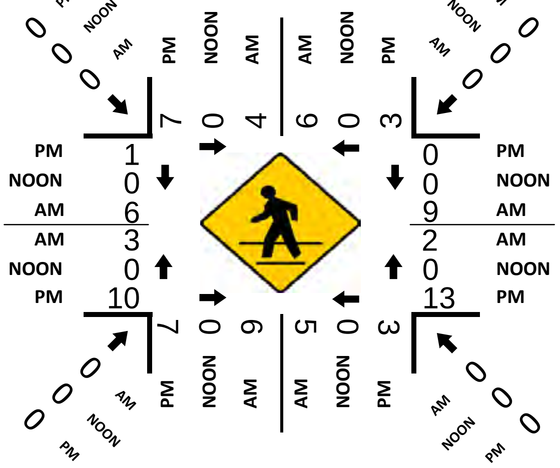
Total Vehicles (Noon)



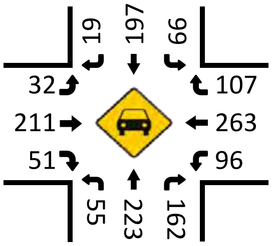
(NOON)



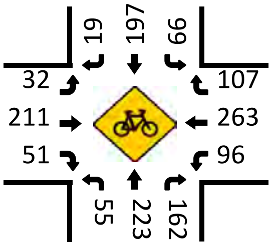
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Freedom Pkwy & Sanborn Rd
City: Salinas
Control:

Project ID: 18-08312-005
Date: 6/6/2018

Total

NS/EW Streets:	Freedom Pkwy				Freedom Pkwy				Sanborn Rd				Sanborn Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	19	20	0	8	20	4	0	3	29	4	0	12	21	6	0	150
7:15 AM	6	27	14	0	8	30	8	0	5	17	7	0	17	23	9	0	171
7:30 AM	13	53	18	0	9	64	6	0	23	45	26	0	18	38	14	0	327
7:45 AM	19	73	37	0	21	91	7	0	8	48	33	0	24	43	19	0	423
8:00 AM	13	77	29	0	28	60	10	0	9	47	12	0	21	49	22	0	377
8:15 AM	7	49	37	0	25	42	8	0	5	45	4	0	12	38	18	0	290
8:30 AM	7	30	21	0	11	20	3	0	9	34	3	2	16	31	11	0	198
8:45 AM	5	21	20	0	8	24	2	0	3	29	8	0	17	30	16	0	183
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	74	349	196	0	118	351	48	0	65	294	97	2	137	273	115	0	2119
APPROACH %'s :	11.95%	56.38%	31.66%	0.00%	22.82%	67.89%	9.28%	0.00%	14.19%	64.19%	21.18%	0.44%	26.10%	52.00%	21.90%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	52	252	121	0	83	257	31	0	45	185	75	0	75	168	73	0	1417
PEAK HR FACTOR :	0.684	0.818	0.818	0.000	0.741	0.706	0.775	0.000	0.489	0.964	0.568	0.000	0.781	0.857	0.830	0.000	0.837
	0.824				0.779				0.811				0.859				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	13	51	29	0	17	39	4	0	8	69	10	1	22	77	25	0	365
2:15 PM	7	40	29	0	19	45	2	1	5	67	13	0	37	53	15	0	333
2:30 PM	11	51	19	0	19	38	7	0	5	45	10	0	21	65	29	0	320
2:45 PM	5	44	44	0	13	58	3	0	6	48	15	0	18	76	25	1	356
3:00 PM	13	68	39	0	20	51	5	1	12	46	21	0	25	68	16	0	385
3:15 PM	13	48	42	0	14	58	5	0	9	57	14	1	24	58	41	0	384
3:30 PM	14	48	34	1	13	49	4	0	5	57	5	0	26	72	25	0	353
3:45 PM	15	59	47	0	19	39	5	1	6	51	11	0	21	65	25	0	364
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	91	409	283	1	134	377	35	3	56	440	99	2	194	534	201	1	2860
APPROACH %'s :	11.61%	52.17%	36.10%	0.13%	24.41%	68.67%	6.38%	0.55%	9.38%	73.70%	16.58%	0.34%	20.86%	57.42%	21.61%	0.11%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	55	223	162	1	66	197	19	2	32	211	51	1	96	263	107	0	1486
PEAK HR FACTOR :	0.917	0.820	0.862	0.250	0.825	0.849	0.950	0.500	0.667	0.925	0.607	0.250	0.923	0.913	0.652	0.000	0.965
	0.911				0.922				0.910				0.947				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Freedom Pkwy & Sanborn Rd
Project ID: 18-08312-005
City: Salinas
Date: 6/6/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Freedom Pkwy		Freedom Pkwy		Sanborn Rd		Sanborn Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	2	1	3
7:15 AM	2	0	2	1	1	1	0	4	11
7:30 AM	2	1	2	2	0	1	1	3	12
7:45 AM	0	1	0	2	1	7	0	2	13
8:00 AM	1	1	4	0	1	0	0	1	8
8:15 AM	1	3	0	1	0	1	2	0	8
8:30 AM	2	0	1	0	2	1	2	2	10
8:45 AM	3	0	1	2	1	2	0	2	11
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	11	6	10	8	6	13	7	15	76
APPROACH %'s :	64.71%	35.29%	55.56%	44.44%	31.58%	68.42%	31.82%	68.18%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	4	6	6	5	2	9	3	6	41
PEAK HR FACTOR :	0.500	0.500	0.375	0.625	0.500	0.321	0.375	0.500	0.788
	0.625		0.688		0.344		0.563		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	1	2	4	2	3	1	4	1	18
2:15 PM	1	2	0	1	0	0	0	1	5
2:30 PM	0	1	2	4	0	4	0	2	13
2:45 PM	0	1	0	0	0	0	0	1	2
3:00 PM	3	0	4	1	3	0	7	0	18
3:15 PM	1	0	2	0	7	0	2	0	12
3:30 PM	2	2	0	2	2	0	0	1	9
3:45 PM	1	1	1	0	1	0	1	0	5
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	9	9	13	10	16	5	14	6	82
APPROACH %'s :	50.00%	50.00%	56.52%	43.48%	76.19%	23.81%	70.00%	30.00%	
PEAK HR :	03:00 PM - 04:00 PM								TOTAL
PEAK HR VOL :	7	3	7	3	13	0	10	1	44
PEAK HR FACTOR :	0.583	0.375	0.438	0.375	0.464		0.357	0.250	0.611
	0.625		0.500		0.464		0.393		

Prepared by National Data & Surveying Services

Buckhorn Dr & Sanborn Rd

Peak Hour Turning Movement Count

ID: 18-08312-001
City: Salinas

Day: Wednesday
Date: 06/06/2018

PEAK HOURS
07:30 AM - 08:30 AM
NONE
03:00 PM - 04:00 PM

COUNT PERIODS
07:00 AM - 09:00 AM
NONE
02:00 PM - 04:00 PM

Buckhorn Dr

SOUTHBOUND

AM	62	24	18	0	62	AM
NOON	0	0	0	0	0	NOON
PM	41	3	7	0	103	PM
	0	0	0	0		

Sanborn Rd

EASTBOUND

AM	NOON	PM	
316	0	464	
0	0	0	0
34	0	67	0
302	0	327	0
52	0	43	0
AM	NOON	PM	

CONTROL

0

TEV	833 AM	0 NOON	1021 PM
PHF	0.91		0.93

WESTBOUND

Sanborn Rd

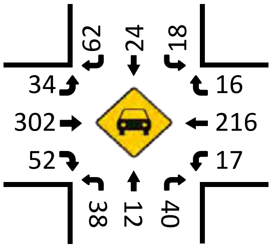
	PM	NOON	AM
0	29	0	16
0	404	0	216
0	30	0	17
0	0	0	2
	378	0	362
	PM	NOON	AM

		0	0	0	0	
PM	76	0	19	7	44	PM
NOON	0	0	0	0	0	NOON
AM	93	0	38	12	40	AM

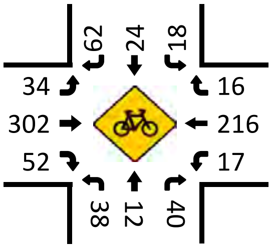
NORTHBOUND

Buckhorn Dr

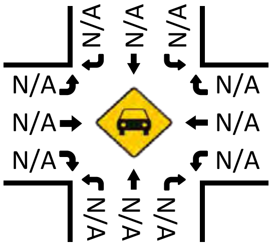
Total Vehicles (AM)



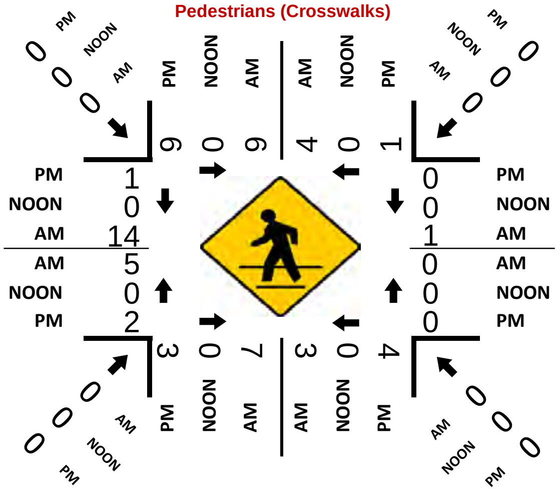
(AM)



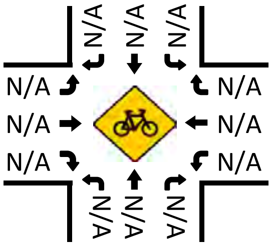
Total Vehicles (Noon)



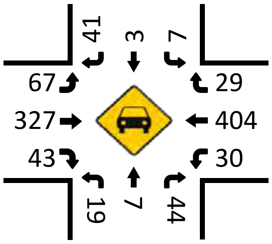
Pedestrians (Crosswalks)



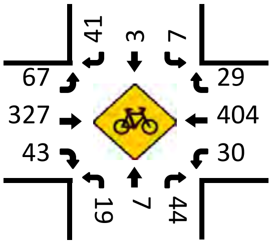
(NOON)



Total Vehicles (PM)



(PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckhorn Dr & Sanborn Rd
City: Salinas
Control:

Project ID: 18-08312-001
Date: 6/6/2018

Total

NS/EW Streets:	Buckhorn Dr				Buckhorn Dr				Sanborn Rd				Sanborn Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	0	3	0	3	2	12	0	4	48	6	0	3	24	2	0	109
7:15 AM	3	1	10	0	1	1	12	0	5	30	3	0	2	36	2	0	106
7:30 AM	14	1	7	0	6	5	25	0	6	54	12	0	4	31	3	0	168
7:45 AM	8	2	13	0	3	7	20	0	10	78	17	0	5	62	1	2	228
8:00 AM	9	4	10	0	2	11	11	0	5	80	17	0	6	67	4	0	226
8:15 AM	7	5	10	0	7	1	6	0	13	90	6	0	2	56	8	0	211
8:30 AM	1	0	5	0	5	1	6	0	3	61	2	0	3	50	10	0	147
8:45 AM	8	0	5	0	2	0	7	0	2	55	1	0	5	45	2	0	132
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	52	13	63	0	29	28	99	0	48	496	64	0	30	371	32	2	1327
APPROACH %'s :	40.63%	10.16%	49.22%	0.00%	18.59%	17.95%	63.46%	0.00%	7.89%	81.58%	10.53%	0.00%	6.90%	85.29%	7.36%	0.46%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	38	12	40	0	18	24	62	0	34	302	52	0	17	216	16	2	833
PEAK HR FACTOR :	0.679	0.600	0.769	0.000	0.643	0.545	0.620	0.000	0.654	0.839	0.765	0.000	0.708	0.806	0.500	0.250	0.913
	0.978				0.722				0.890				0.815				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	4	1	9	0	1	1	7	0	20	81	10	0	10	116	8	0	268
2:15 PM	6	4	6	0	0	3	11	0	13	92	14	0	8	88	15	0	260
2:30 PM	4	2	9	0	2	0	17	0	8	62	6	0	5	96	8	0	219
2:45 PM	1	0	9	0	0	1	10	0	15	90	4	0	6	107	5	0	248
3:00 PM	4	3	7	0	0	0	8	0	16	75	13	0	5	91	4	0	226
3:15 PM	5	1	10	0	2	1	12	0	24	84	8	0	9	112	5	0	273
3:30 PM	3	1	12	0	1	0	10	0	9	86	9	0	9	108	8	0	256
3:45 PM	7	2	15	0	4	2	11	0	18	82	13	0	7	93	12	0	266
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	34	14	77	0	10	8	86	0	123	652	77	0	59	811	65	0	2016
APPROACH %'s :	27.20%	11.20%	61.60%	0.00%	9.62%	7.69%	82.69%	0.00%	14.44%	76.53%	9.04%	0.00%	6.31%	86.74%	6.95%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	19	7	44	0	7	3	41	0	67	327	43	0	30	404	29	0	1021
PEAK HR FACTOR :	0.679	0.583	0.733	0.000	0.438	0.375	0.854	0.000	0.698	0.951	0.827	0.000	0.833	0.902	0.604	0.000	0.935
	0.729				0.750				0.942				0.919				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckhorn Dr & Sanborn Rd
City: Salinas

Project ID: 18-08312-001
Date: 6/6/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Buckhorn Dr		Buckhorn Dr		Sanborn Rd		Sanborn Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	3	0	0	0	0	0	3
7:15 AM	0	1	0	7	0	0	0	0	8
7:30 AM	3	0	1	1	0	0	0	2	7
7:45 AM	2	0	2	0	0	1	2	8	15
8:00 AM	2	2	3	1	0	0	2	3	13
8:15 AM	2	2	1	1	0	0	1	1	8
8:30 AM	4	1	1	0	0	0	2	0	8
8:45 AM	7	2	2	2	0	0	1	3	17
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	20	8	13	12	0	1	8	17	79
APPROACH %'s :	71.43%	28.57%	52.00%	48.00%	0.00%	100.00%	32.00%	68.00%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	9	4	7	3	0	1	5	14	43
PEAK HR FACTOR :	0.750	0.500	0.583	0.750		0.250	0.625	0.438	0.717
	0.813		0.625		0.250		0.475		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	1	0	4	0	1	3	8	0	17
2:15 PM	1	5	2	0	0	0	0	5	13
2:30 PM	1	1	2	3	0	0	0	0	7
2:45 PM	0	1	0	3	0	1	7	0	12
3:00 PM	0	0	0	1	0	0	1	0	2
3:15 PM	3	0	1	0	0	0	1	0	5
3:30 PM	3	1	0	2	0	0	0	0	6
3:45 PM	3	0	2	1	0	0	0	1	7
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	12	8	11	10	1	4	17	6	69
APPROACH %'s :	60.00%	40.00%	52.38%	47.62%	20.00%	80.00%	73.91%	26.09%	
PEAK HR :	03:00 PM - 04:00 PM								TOTAL
PEAK HR VOL :	9	1	3	4	0	0	2	1	20
PEAK HR FACTOR :	0.750	0.250	0.375	0.500			0.500	0.250	0.714
	0.625		0.583				0.750		

Prepared by National Data & Surveying Services

Buckhorn Dr & Falcon Dr

Peak Hour Turning Movement Count

ID: 18-08312-002
City: Salinas

Day: Wednesday
Date: 06/06/2018

PEAK HOURS		COUNT PERIODS
07:30 AM - 08:30 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
03:00 PM - 04:00 PM	PM	02:00 PM - 04:00 PM

Buckhorn Dr

SOUTHBOUND

AM	8	0	94	2	82
NOON	0	0	0	0	0
PM	15	0	20	0	53
	0	0	0	0	

Falcon Dr

EASTBOUND

	AM	NOON	PM	
	17	0	42	
	0	0	0	0
	22	0	15	0
	19	0	11	0
	0	0	0	0
	AM	NOON	PM	

WESTBOUND

Falcon Dr

	PM	NOON	AM
0	38	0	58
0	27	0	9
0	0	0	0
0	2	0	1
	33	0	114
	PM	NOON	AM

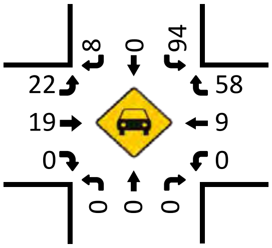
CONTROL			
0			
TEV	213 AM	0 NOON	128 PM
PHF	0.71		0.80

		0	0	0	0	
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

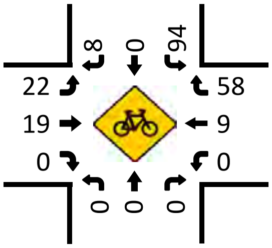
NORTHBOUND

Buckhorn Dr

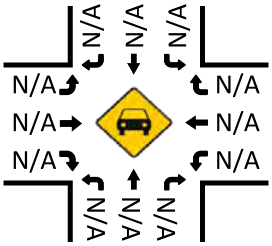
Total Vehicles (AM)



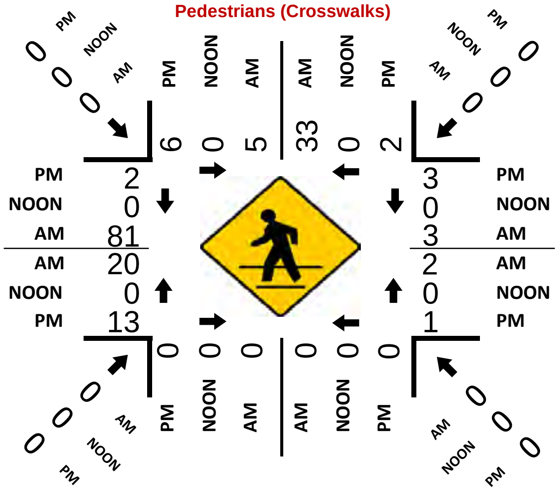
(AM)



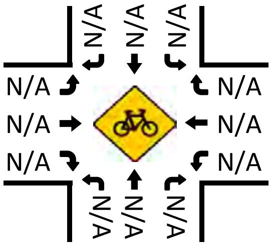
Total Vehicles (Noon)



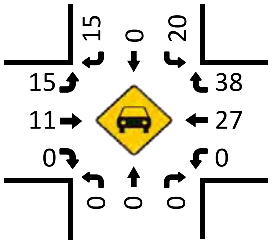
Pedestrians (Crosswalks)



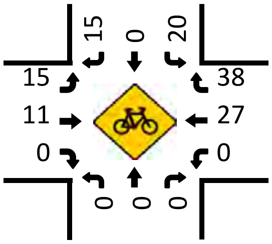
(NOON)



Total Vehicles (PM)



(PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckhorn Dr & Falcon Dr
City: Salinas
Control:

Project ID: 18-08312-002
Date: 6/6/2018

Total

NS/EW Streets:	Buckhorn Dr				Buckhorn Dr				Falcon Dr				Falcon Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	6	0	1	0	1	3	0	0	0	0	2	0	13
7:15 AM	0	0	0	0	5	0	0	0	2	2	0	0	0	1	8	0	18
7:30 AM	0	0	0	0	19	0	1	0	6	4	0	0	0	4	9	0	43
7:45 AM	0	0	0	0	26	0	2	2	5	6	0	0	0	1	14	0	56
8:00 AM	0	0	0	0	39	0	3	0	8	8	0	0	0	1	16	0	75
8:15 AM	0	0	0	0	10	0	2	0	3	1	0	0	0	3	19	1	39
8:30 AM	0	0	0	0	8	0	1	0	2	1	0	0	0	0	2	0	14
8:45 AM	0	0	0	0	3	0	2	0	5	3	0	0	0	2	6	0	21
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	116	0	12	2	32	28	0	0	0	12	76	1	279
APPROACH %'s :					89.23%	0.00%	9.23%	1.54%	53.33%	46.67%	0.00%	0.00%	0.00%	13.48%	85.39%	1.12%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	94	0	8	2	22	19	0	0	0	9	58	1	213
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.603	0.000	0.667	0.250	0.688	0.594	0.000	0.000	0.000	0.563	0.763	0.250	0.710
						0.619				0.641				0.739			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	9	0	2	0	2	1	0	0	0	3	6	0	23
2:15 PM	0	0	0	0	10	0	4	0	5	3	0	0	0	6	8	0	36
2:30 PM	0	0	0	0	8	0	0	0	9	4	0	0	0	5	5	0	31
2:45 PM	0	0	0	0	5	0	4	0	3	2	0	0	0	5	4	0	23
3:00 PM	0	0	0	0	5	0	2	0	3	2	0	0	0	7	11	0	30
3:15 PM	0	0	0	0	5	0	6	0	2	3	0	0	0	7	8	0	31
3:30 PM	0	0	0	0	4	0	3	0	4	4	0	0	0	5	7	0	27
3:45 PM	0	0	0	0	6	0	4	0	6	2	0	0	0	8	12	2	40
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	52	0	25	0	34	21	0	0	0	46	61	2	241
APPROACH %'s :					67.53%	0.00%	32.47%	0.00%	61.82%	38.18%	0.00%	0.00%	0.00%	42.20%	55.96%	1.83%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	20	0	15	0	15	11	0	0	0	27	38	2	128
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.833	0.000	0.625	0.000	0.625	0.688	0.000	0.000	0.000	0.844	0.792	0.250	0.800
						0.795				0.813				0.761			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckhorn Dr & Falcon Dr
City: Salinas

Project ID: 18-08312-002
Date: 6/6/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Buckhorn Dr		Buckhorn Dr		Falcon Dr		Falcon Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	1	0	1
7:15 AM	1	2	0	0	0	0	1	3	7
7:30 AM	0	3	0	0	0	0	0	4	7
7:45 AM	2	19	0	0	1	3	6	30	61
8:00 AM	1	11	0	0	0	0	7	47	66
8:15 AM	2	0	0	0	1	0	7	0	10
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	5	0	0	0	0	0	7	12
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	6	40	0	0	2	3	22	91	164
APPROACH %'s :	13.04%	86.96%			40.00%	60.00%	19.47%	80.53%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	5	33	0	0	2	3	20	81	144
PEAK HR FACTOR :	0.625	0.434			0.500	0.250	0.714	0.431	0.545
	0.452				0.313		0.468		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	1	0	0	0	1	2	12	1	17
2:15 PM	0	0	0	0	6	0	3	2	11
2:30 PM	1	0	0	0	0	4	0	3	8
2:45 PM	1	2	0	0	0	0	4	1	8
3:00 PM	1	1	0	0	0	0	2	1	5
3:15 PM	1	0	0	0	1	0	1	1	4
3:30 PM	1	1	0	0	0	1	5	0	8
3:45 PM	3	0	0	0	0	2	5	0	10
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	9	4	0	0	8	9	32	9	71
APPROACH %'s :	69.23%	30.77%			47.06%	52.94%	78.05%	21.95%	
PEAK HR :	03:00 PM - 04:00 PM								TOTAL
PEAK HR VOL :	6	2	0	0	1	3	13	2	27
PEAK HR FACTOR :	0.500	0.500			0.250	0.375	0.650	0.500	0.675
	0.667				0.500		0.750		

Prepared by National Data & Surveying Services

Freedom Pkwy & Cougar Dr

Peak Hour Turning Movement Count

ID: 18-08312-004
City: Salinas

Day: Wednesday
Date: 06/06/2018

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	03:00 PM - 04:00 PM	02:00 PM - 04:00 PM

Freedom Pkwy

SOUTHBOUND

AM	9	383	70	1	399	AM
NOON	0	0	0	0	0	NOON
PM	16	250	36	0	431	PM
	↲	↓	↳	↶	⇧	
	0	0	0	0		

Cougar Dr

EASTBOUND

AM	NOON	PM		
27	0	72	⇦	
0	0	0	↶	0
19	0	11	↱	0
5	0	4	→	0
34	0	25	↴	0
AM	NOON	PM		

CONTROL

0

	AM	NOON	PM
TEV	993	0	866
PHF	0.72		0.88

Cougar Dr

WESTBOUND

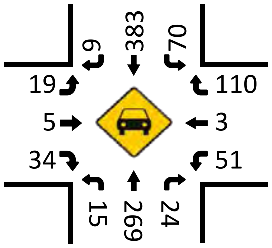
		PM	NOON	AM
0	↰	46	0	110
0	←	4	0	3
0	↲	22	0	51
0	↶	0	0	0
	⇨	66	0	99
		PM	NOON	AM

NORTHBOUND

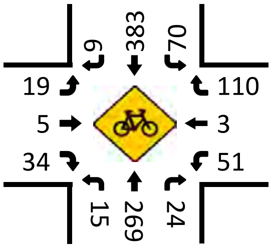
Freedom Pkwy

		0	0	0	0	
	⇩	↶	↰	↑	↱	
PM	297	0	52	374	26	PM
NOON	0	0	0	0	0	NOON
AM	468	0	15	269	24	AM

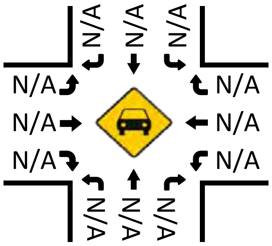
Total Vehicles (AM)



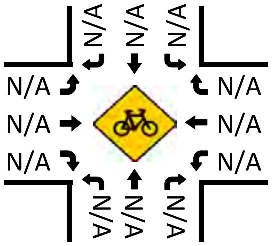
(AM)



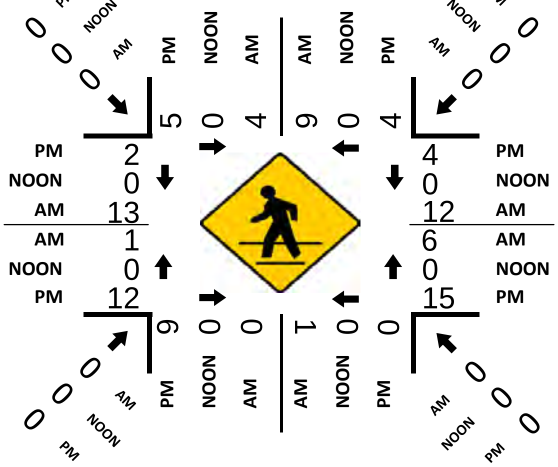
Total Vehicles (Noon)



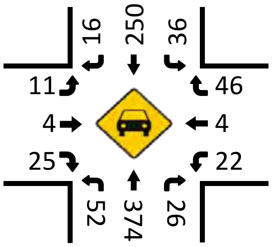
(NOON)



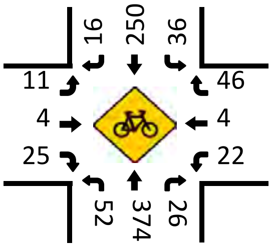
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Freedom Pkwy & Cougar Dr
City: Salinas
Control:

Project ID: 18-08312-004
Date: 6/6/2018

Total

NS/EW Streets:	Freedom Pkwy				Freedom Pkwy				Cougar Dr				Cougar Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	28	1	0	7	36	0	0	3	0	6	0	9	1	8	0	100
7:15 AM	0	31	3	0	6	51	3	0	2	0	8	0	8	2	11	0	125
7:30 AM	0	50	3	0	10	123	4	0	7	2	11	0	13	0	14	0	237
7:45 AM	7	88	4	0	28	148	2	1	4	1	15	0	11	1	36	0	346
8:00 AM	4	75	14	0	25	62	2	0	4	2	5	0	22	1	37	0	253
8:15 AM	4	56	3	0	7	50	1	0	4	0	3	0	5	1	23	0	157
8:30 AM	3	41	2	0	3	27	3	0	3	1	3	0	4	0	4	0	94
8:45 AM	0	28	2	0	7	43	2	0	6	0	2	0	7	1	5	0	103
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	19	397	32	0	93	540	17	1	33	6	53	0	79	7	138	0	1415
APPROACH %'s :	4.24%	88.62%	7.14%	0.00%	14.29%	82.95%	2.61%	0.15%	35.87%	6.52%	57.61%	0.00%	35.27%	3.13%	61.61%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	15	269	24	0	70	383	9	1	19	5	34	0	51	3	110	0	993
PEAK HR FACTOR :	0.536	0.764	0.429	0.000	0.625	0.647	0.563	0.250	0.679	0.625	0.567	0.000	0.580	0.750	0.743	0.000	0.717
	0.778				0.647				0.725				0.683				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	7	60	5	0	9	49	6	0	4	1	9	0	3	1	14	0	168
2:15 PM	7	53	8	0	8	61	8	0	3	0	5	0	7	0	9	0	169
2:30 PM	2	62	5	1	9	67	5	0	3	2	4	0	6	0	12	0	178
2:45 PM	7	60	3	0	10	82	7	0	7	0	7	0	9	0	7	0	199
3:00 PM	11	97	6	0	8	82	6	0	4	1	12	0	8	1	11	0	247
3:15 PM	13	84	7	0	15	72	2	0	2	1	9	0	6	2	10	0	223
3:30 PM	12	81	6	0	8	52	6	0	1	0	3	0	3	0	10	0	182
3:45 PM	16	112	7	0	5	44	2	0	4	2	1	0	5	1	15	0	214
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	75	609	47	1	72	509	42	0	28	7	50	0	47	5	88	0	1580
APPROACH %'s :	10.25%	83.20%	6.42%	0.14%	11.56%	81.70%	6.74%	0.00%	32.94%	8.24%	58.82%	0.00%	33.57%	3.57%	62.86%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	52	374	26	0	36	250	16	0	11	4	25	0	22	4	46	0	866
PEAK HR FACTOR :	0.813	0.835	0.929	0.000	0.600	0.762	0.667	0.000	0.688	0.500	0.521	0.000	0.688	0.500	0.767	0.000	0.877
	0.837				0.786				0.588				0.857				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Freedom Pkwy & Cougar Dr **Project ID:** 18-08312-004
City: Salinas **Date:** 6/6/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Freedom Pkwy		Freedom Pkwy		Cougar Dr		Cougar Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	2	2	0	4
7:15 AM	0	0	0	0	0	4	0	5	9
7:30 AM	0	2	0	1	4	5	0	4	16
7:45 AM	3	5	0	0	0	5	0	6	19
8:00 AM	1	2	0	0	0	1	1	1	6
8:15 AM	0	0	0	0	2	1	0	2	5
8:30 AM	0	0	0	0	2	1	0	0	3
8:45 AM	2	0	0	0	0	0	3	4	9
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	6	9	0	1	8	19	6	22	71
APPROACH %'s :	40.00%	60.00%	0.00%	100.00%	29.63%	70.37%	21.43%	78.57%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	4	9	0	1	6	12	1	13	46
PEAK HR FACTOR :	0.333	0.450		0.250	0.375	0.600	0.250	0.542	0.605
	0.406		0.250		0.500		0.583		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	1	0	0	0	1	0	2
2:15 PM	0	0	0	0	0	0	0	1	1
2:30 PM	0	0	1	0	0	1	0	4	6
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	3	0	6	0	10	0	7	0	26
3:15 PM	1	2	0	0	3	2	2	0	10
3:30 PM	0	2	0	0	2	0	1	0	5
3:45 PM	1	0	0	0	0	2	2	2	7
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	5	4	8	0	15	5	13	7	57
APPROACH %'s :	55.56%	44.44%	100.00%	0.00%	75.00%	25.00%	65.00%	35.00%	
PEAK HR :	03:00 PM - 04:00 PM								TOTAL
PEAK HR VOL :	5	4	6	0	15	4	12	2	48
PEAK HR FACTOR :	0.417	0.500	0.250		0.375	0.500	0.429	0.250	0.462
	0.750		0.250		0.475		0.500		

Prepared by National Data & Surveying Services

Boronda Rd & Sanborn Rd

Peak Hour Turning Movement Count

ID: 18-08312-006
City: Salinas

Day: Wednesday
Date: 06/06/2018

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	02:45 PM - 03:45 PM	02:00 PM - 04:00 PM

Boronda Rd

SOUTHBOUND

AM	86	354	0	0	319	AM
NOON	0	0	0	0	0	NOON
PM	155	322	0	0	437	PM
	↲	↓	↳	↶	⇧	
	0	0	0	0		

Sanborn Rd

EASTBOUND

AM	NOON	PM		
142	0	266	⇦	
0	0	2	↶	0
129	0	161	↰	0
0	0	0	→	0
19	0	23	↴	0
AM	NOON	PM		

WESTBOUND

Sanborn Rd

		PM	NOON	AM
0	↰	0	0	0
0	←	0	0	0
0	↱	0	0	0
0	↶	0	0	0
	⇨	0	0	0
		PM	NOON	AM

CONTROL

0

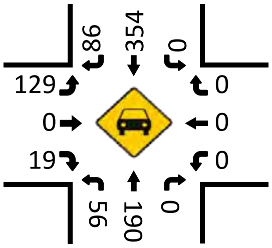
TEV	834 AM	0 NOON	1048 PM
PHF	0.87		0.92

		0	0	0	0	
	⇩	↶	↰	↑	↱	
PM	345	0	109	276	0	PM
NOON	0	0	0	0	0	NOON
AM	373	0	56	190	0	AM

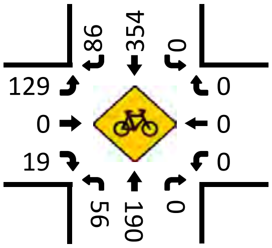
NORTHBOUND

Boronda Rd

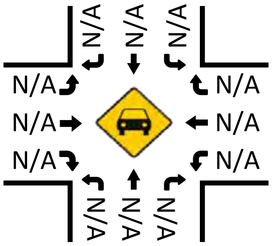
Total Vehicles (AM)



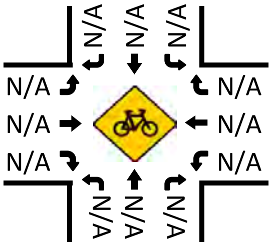
(AM)



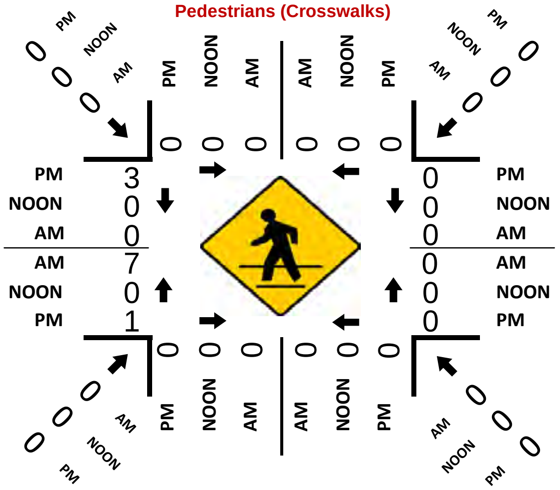
Total Vehicles (Noon)



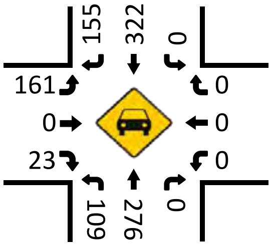
(NOON)



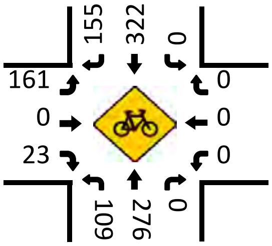
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Boronda Rd & Sanborn Rd
City: Salinas
Control:

Project ID: 18-08312-006
Date: 6/6/2018

Total

NS/EW Streets:	Boronda Rd				Boronda Rd				Sanborn Rd				Sanborn Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	9	22	0	0	0	40	9	0	32	0	4	0	0	0	0	0	116
7:15 AM	15	38	0	0	0	59	17	0	30	0	4	0	0	0	0	0	163
7:30 AM	11	44	0	0	0	89	14	0	40	0	7	0	0	0	0	0	205
7:45 AM	10	53	0	0	0	115	27	0	28	0	6	0	0	0	0	0	239
8:00 AM	20	55	0	0	0	91	28	0	31	0	2	0	0	0	0	0	227
8:15 AM	11	43	0	0	0	41	15	0	42	0	6	0	0	0	0	0	158
8:30 AM	9	26	0	0	0	33	14	0	35	0	2	0	0	0	0	0	119
8:45 AM	10	47	0	0	0	49	12	0	31	0	3	0	0	0	0	0	152
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	95	328	0	0	0	517	136	0	269	0	34	0	0	0	0	0	1379
APPROACH %'s :	22.46%	77.54%	0.00%	0.00%	0.00%	79.17%	20.83%	0.00%	88.78%	0.00%	11.22%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	56	190	0	0	0	354	86	0	129	0	19	0	0	0	0	0	834
PEAK HR FACTOR :	0.700	0.864	0.000	0.000	0.000	0.770	0.768	0.000	0.806	0.000	0.679	0.000	0.000	0.000	0.000	0.000	0.872
	0.820				0.775				0.787								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	25	51	0	0	0	89	44	0	39	0	10	1	0	0	0	0	259
2:15 PM	18	39	0	0	0	65	31	0	41	0	9	1	0	0	0	0	204
2:30 PM	11	46	0	0	0	59	30	1	39	0	5	2	0	0	0	0	193
2:45 PM	23	64	0	0	0	84	37	0	43	0	6	0	0	0	0	0	257
3:00 PM	25	56	0	0	0	91	44	0	35	0	4	1	0	0	0	0	256
3:15 PM	31	85	0	0	0	88	39	0	34	0	7	1	0	0	0	0	285
3:30 PM	30	71	0	0	0	59	35	0	49	0	6	0	0	0	0	0	250
3:45 PM	27	66	0	0	0	74	36	0	36	0	9	0	0	0	0	0	248
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	190	478	0	0	0	609	296	1	316	0	56	6	0	0	0	0	1952
APPROACH %'s :	28.44%	71.56%	0.00%	0.00%	0.00%	67.22%	32.67%	0.11%	83.60%	0.00%	14.81%	1.59%					
PEAK HR :	02:45 PM - 03:45 PM																TOTAL
PEAK HR VOL :	109	276	0	0	0	322	155	0	161	0	23	2	0	0	0	0	1048
PEAK HR FACTOR :	0.879	0.812	0.000	0.000	0.000	0.885	0.881	0.000	0.821	0.000	0.821	0.500	0.000	0.000	0.000	0.000	0.919
	0.830				0.883				0.845								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Boronda Rd & Sanborn Rd
City: Salinas

Project ID: 18-08312-006
Date: 6/6/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Boronda Rd		Boronda Rd		Sanborn Rd		Sanborn Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	2	2
7:15 AM	0	0	0	0	0	0	1	0	1
7:30 AM	0	0	0	0	0	0	2	0	2
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	4	0	4
8:15 AM	0	0	0	0	0	0	0	1	1
8:30 AM	0	0	0	0	0	0	2	0	2
8:45 AM	0	0	0	0	0	0	2	5	7
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	11	8	19
APPROACH %'s :							57.89%	42.11%	
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	7	0	7
PEAK HR FACTOR :							0.438		0.438
							0.438		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	3	3
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	2	2
2:45 PM	0	0	0	0	0	0	0	1	1
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	1	1	2
3:30 PM	0	0	0	0	0	0	0	1	1
3:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	8	9
APPROACH %'s :							11.11%	88.89%	
PEAK HR :	02:45 PM - 03:45 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	3	4
PEAK HR FACTOR :							0.250	0.750	0.500
							0.500		

Prepared by National Data & Surveying Services

Elk Dr & Falcon Dr

Peak Hour Turning Movement Count

ID: 18-08312-007
City: Salinas

Day: Wednesday
Date: 06/06/2018

PEAK HOURS	
AM	07:30 AM - 08:30 AM
NOON	NONE
PM	03:00 PM - 04:00 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	02:00 PM - 04:00 PM

Elk Dr

SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	1	0	0	0	0
	0	0	0	0	

Falcon Dr

EASTBOUND

	AM	NOON	PM	
⇦	61	0	70	
↶	1	0	0	0
↱	0	0	0	0
→	20	0	17	0
↴	89	0	18	0
	AM	NOON	PM	

Falcon Dr

WESTBOUND

		PM	NOON	AM
0	↰	0	0	0
0	←	41	0	16
0	↙	35	0	84
0	↷	1	0	0
	⇨	46	0	75
		PM	NOON	AM

CONTROL

0

	AM	NOON	PM
TEV	309	0	169
PHF	0.69		0.81

	⇩	↶	↰	↑	↱
		0	0	0	0
PM	53	0	28	0	28
NOON	0	0	0	0	0
AM	173	0	44	0	55

NORTHBOUND

Elk Dr

Total Vehicles (AM)

Southbound: 0 ↲, 0 ↓, 0 ↳
Eastbound: 0 ↶, 20 →, 89 ↴
Westbound: 0 ↰, 16 ←, 84 ↙
Northbound: 44 ↰, 0 ↑, 55 ↱

(AM)

Southbound: 0 ↲, 0 ↓, 0 ↳
Eastbound: 0 ↶, 20 →, 89 ↴
Westbound: 0 ↰, 16 ←, 84 ↙
Northbound: 44 ↰, 0 ↑, 55 ↱

Total Vehicles (Noon)

Southbound: N/A ↲, N/A ↓, N/A ↳
Eastbound: N/A ↶, N/A →, N/A ↴
Westbound: N/A ↰, N/A ←, N/A ↙
Northbound: N/A ↰, N/A ↑, N/A ↱

(NOON)

Southbound: N/A ↲, N/A ↓, N/A ↳
Eastbound: N/A ↶, N/A →, N/A ↴
Westbound: N/A ↰, N/A ←, N/A ↙
Northbound: N/A ↰, N/A ↑, N/A ↱

Total Vehicles (PM)

Southbound: 1 ↲, 0 ↓, 0 ↳
Eastbound: 0 ↶, 17 →, 18 ↴
Westbound: 0 ↰, 41 ←, 35 ↙
Northbound: 28 ↰, 0 ↑, 28 ↱

(PM)

Southbound: 1 ↲, 0 ↓, 0 ↳
Eastbound: 0 ↶, 17 →, 18 ↴
Westbound: 0 ↰, 41 ←, 35 ↙
Northbound: 28 ↰, 0 ↑, 28 ↱

Pedestrians (Crosswalks)

	PM	NOON	AM	AM	NOON	PM
North	0	0	0	0	0	0
South	1	0	4	4	0	2

	PM	NOON	AM	AM	NOON	PM
West	0	0	6	1	0	3
East	0	0	0	0	0	0

NW: PM 0, NOON 0, AM 0
NE: AM 0, NOON 0, PM 0
SW: AM 0, NOON 0, PM 0
SE: AM 0, NOON 0, PM 0

National Data & Surveying Services

Intersection Turning Movement Count

Location: Elk Dr & Falcon Dr
City: Salinas
Control:

Project ID: 18-08312-007
Date: 6/6/2018

Total

NS/EW Streets:	Elk Dr				Elk Dr				Falcon Dr				Falcon Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	3	0	0	0	0	0	0	5	6	0	5	1	0	0	21
7:15 AM	5	0	8	0	0	0	0	0	0	3	4	0	7	3	0	0	30
7:30 AM	5	0	14	0	0	0	0	0	0	6	17	1	13	6	0	0	62
7:45 AM	6	0	12	0	0	0	0	0	0	5	27	0	25	6	0	0	81
8:00 AM	14	0	18	0	0	0	0	0	0	3	38	0	38	1	0	0	112
8:15 AM	19	0	11	0	0	0	0	0	0	6	7	0	8	3	0	0	54
8:30 AM	2	0	8	0	0	0	0	0	1	2	6	0	4	0	0	0	23
8:45 AM	2	0	8	0	0	0	0	0	0	2	2	0	6	5	0	0	25
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	54	0	82	0	0	0	0	0	1	32	107	1	106	25	0	0	408
APPROACH %'s :	39.71%	0.00%	60.29%	0.00%					0.71%	22.70%	75.89%	0.71%	80.92%	19.08%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	44	0	55	0	0	0	0	0	0	20	89	1	84	16	0	0	309
PEAK HR FACTOR :	0.579	0.000	0.764	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.586	0.250	0.553	0.667	0.000	0.000	0.690
		0.773								0.671				0.641			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	3	0	4	0	0	0	0	0	0	8	5	0	10	6	0	0	36
2:15 PM	5	0	7	0	0	0	0	0	0	5	9	0	4	9	0	0	39
2:30 PM	2	0	5	0	0	0	0	0	0	4	6	0	4	8	0	0	29
2:45 PM	2	0	8	0	0	0	0	0	0	2	3	0	7	9	0	0	31
3:00 PM	6	0	7	0	0	0	0	0	0	4	5	0	17	12	0	1	52
3:15 PM	6	0	9	0	0	0	0	0	0	4	4	0	11	12	0	0	46
3:30 PM	5	0	7	0	0	0	1	0	0	4	4	0	5	6	0	0	32
3:45 PM	11	0	5	0	0	0	0	0	0	5	5	0	2	11	0	0	39
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	40	0	52	0	0	0	1	0	0	36	41	0	60	73	0	1	304
APPROACH %'s :	43.48%	0.00%	56.52%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	46.75%	53.25%	0.00%	44.78%	54.48%	0.00%	0.75%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	28	0	28	0	0	0	1	0	0	17	18	0	35	41	0	1	169
PEAK HR FACTOR :	0.636	0.000	0.778	0.000	0.000	0.000	0.250	0.000	0.000	0.850	0.900	0.000	0.515	0.854	0.000	0.250	0.813
		0.875				0.250				0.875				0.642			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Elk Dr & Falcon Dr **Project ID:** 18-08312-007
City: Salinas **Date:** 6/6/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Elk Dr		Elk Dr		Falcon Dr		Falcon Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	1	4	0	0	0	0	5
8:00 AM	0	0	0	0	0	0	0	6	6
8:15 AM	0	0	3	0	0	0	1	0	4
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	3	0	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	4	4	0	0	4	6	18
APPROACH %'s :			50.00%	50.00%			40.00%	60.00%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	4	4	0	0	1	6	15
PEAK HR FACTOR :			0.333	0.250			0.250	0.250	0.625
			0.400				0.292		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	1	0	0	0	0	0	1
2:30 PM	0	0	1	0	0	0	0	0	1
2:45 PM	0	0	0	1	0	1	0	0	2
3:00 PM	0	0	0	1	0	0	0	0	1
3:15 PM	0	0	1	1	0	0	0	0	2
3:30 PM	0	0	0	0	0	0	2	0	2
3:45 PM	0	0	0	0	0	0	1	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	3	3	0	1	3	0	10
APPROACH %'s :			50.00%	50.00%	0.00%	100.00%	100.00%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM								TOTAL
PEAK HR VOL :	0	0	1	2	0	0	3	0	6
PEAK HR FACTOR :			0.250	0.500			0.375		0.750
			0.375				0.375		

Appendix C: Methodology

Levels of Service Methodology

The description and procedures for calculating capacity and level of service (LOS) are found in the Transportation Research Board, Highway Capacity Manual (HCM). The HCM 2010 represents the research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level of service (LOS), from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish a LOS.

Urban Streets (Automobile Mode)

The term "urban streets" refers to urban arterials and collectors, including those in downtown areas. Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials. Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials, and unlike arterials their operation is not always dominated by traffic signals. Downtown streets are signalized facilities that often resemble arterials. They not only move through traffic but also provide access to local businesses for passenger cars, transit buses, and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing taxicabs, buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

Flow Characteristics

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control.

The street environment includes the geometric characteristics of the facility, the character of roadside activity, and adjacent land uses. Thus, the environment reflects the number and width of lanes, type of median, driveway/access point density, spacing between signalized intersections, existence of parking, level of pedestrian and bicyclist activity and speed limit.

The interaction among vehicles is determined by traffic density, the proportion of trucks and buses, and turning movements. This interaction affects the operation of vehicles at intersections and, to a lesser extent, between signals.

Traffic controls (including signals and signs) forces a portion of all vehicles to slow or stop. The delays and speed changes caused by traffic control devices reduce vehicle speeds; however, such controls are needed to establish right-of-way.

Levels of Service (automobile Mode)

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service (LOS). The travel speed along a segment, section or entire length of an urban street is dependent on the running speed between signalized intersections and the amount of control delay incurred at signalized intersections.

LOS A describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal. Travel speeds exceed 85 of the base free flow speed (FFS).

LOS B describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67 and 85 percent of the base FFS.

LOS C describes stable operations. The ability to maneuver and change lanes in midblock location may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50 and 67 percent of the base FFS.

LOS D indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volumes, inappropriate signal timing, at the boundary intersections. The travel speed is between 40 and 50 percent of the base FFS.

LOS E is characterized unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30 and 40 percent of the base FFS.

LOS F is characterized by street flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30 percent or less of the base FFS.

Table A-1: Urban Street Levels of Service (Automobile Mode)

Travel Speed as a Percentage of Base Free-Flow Speed (%)	LOS by Critical Volume-to-Capacity Ratio[a]	
	≤1.0	>1.0
>85	A	F
>67 to 85	B	F
>50 to 67	C	F
>40 to 50	D	F
>30 to 40	E	F
≤30	F	F

a = The Critical volume-to-capacity ratio is based on consideration of the through movement-to-capacity ratio at each boundary intersection in the subject direction of travel. The critical volume-to-capacity ratio is the largest ratio of those considered.

Source: Highway Capacity Manual 2010, Exhibit 16-4. Urban Street LOS Criteria (Automobile Mode)

Intersection Levels of Service

One of the more important elements limiting, and often interrupting the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals, stop and yield signs.

Signalized Intersections – Performance Measures

For signalized intersections the performance measures include automobile volume-to-capacity ratio, automobile delay, queue storage length, ratio of pedestrian delay, pedestrian circulation area, pedestrian perception score, bicycle delay, and bicycle perception score. LOS is also considered a performance measure. For the automobile mode average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. A LOS designation is given to the weighted average control delay to better describe the level of operation. A description of LOS for signalized intersections is found in Table A-2.

Table A-2: Signalized Intersection Level of Service Description (Automobile Mode)

Level of Service	Description	Average Control Delay (seconds per vehicle)
A	Operations with a control delay of 10 seconds/vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when volume-to-capacity ratio is and either progression is exceptionally favorable or the cycle length is very short. If it's due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Operations with control delay between 10.1 to 20.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	>10.0 to 20.0
C	Operations with average control delays between 20.1 to 35.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 to 35
D	Operations with control delay between 35.1 to 55.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop, and i ndividual cycle failures are noticeable.	>35 to 55
E	Operations with control delay between 55.1 to 80.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	>55 to 80
F	Operations with unacceptable control delay exceeding 80.0 seconds/vehicle and a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80

Source: Highway Capacity Manual 2010

Unsignalized Intersections

The HCM 2010 procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, i. e., in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

All-Way Stop Controlled Intersections

All-way stop controlled intersections is a form of traffic controls in which all approaches to an intersection are required to stop. Similar to signalized intersections, at all-way stop controlled intersections the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection as a whole. In other words the delay measured for all-way stop controlled intersections is a measure of the average delay for all vehicles passing through the intersection during the peak hour. A LOS designation is given to the weighted average control delay to better describe the level of operation.

Two-Way Stop Controlled Intersections

Two-way stop controlled (TWSC) intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At TWSC intersections the stop-controlled approaches are referred as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay are determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. A LOS for TWSC intersection is determined by the computed or measured control delay for each minor movement. LOS is not defined for the intersection as a whole for three main reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at the typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay from all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. Table A-3 provides a description of LOS at unsignalized intersections.

Table A-3: Unsignalized Intersection Level of Service Description (Automobile Mode)

Control Delay (seconds per vehicle)	**LOS by Volume-to-Capacity Ratio**	
	v/c ≤ 1.0	**v/c > 1.0**
≤10	A	F
>10 to 15	B	F
>15 to 25	C	F
>25 to 35	D	F
>35 to 50	E	F
>50	F	F

Source: HCM 2010 Exhibit 19-1.

Appendix D: Existing Traffic Conditions

HCM 6th Signalized Intersection Summary
1: Freedom Parkway & Sanborn Road

Existing AM Peak
02/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	45	185	75	75	168	73	52	252	121	83	257	31
Future Volume (veh/h)	45	185	75	75	168	73	52	252	121	83	257	31
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	54	220	89	89	200	87	62	300	144	99	306	37
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	95	570	223	128	603	252	104	633	296	135	919	110
Arrive On Green	0.05	0.23	0.23	0.07	0.25	0.25	0.06	0.27	0.27	0.08	0.29	0.29
Sat Flow, veh/h	1795	2504	979	1795	2451	1025	1795	2358	1103	1795	3217	385
Grp Volume(v), veh/h	54	155	154	89	144	143	62	226	218	99	169	174
Grp Sat Flow(s),veh/h/ln	1795	1791	1692	1795	1791	1686	1795	1791	1670	1795	1791	1811
Q Serve(g_s), s	1.4	3.6	3.8	2.4	3.2	3.4	1.7	5.2	5.4	2.7	3.7	3.7
Cycle Q Clear(g_c), s	1.4	3.6	3.8	2.4	3.2	3.4	1.7	5.2	5.4	2.7	3.7	3.7
Prop In Lane	1.00		0.58	1.00		0.61	1.00		0.66	1.00		0.21
Lane Grp Cap(c), veh/h	95	408	385	128	441	415	104	481	448	135	512	518
V/C Ratio(X)	0.57	0.38	0.40	0.69	0.33	0.34	0.60	0.47	0.49	0.73	0.33	0.34
Avail Cap(c_a), veh/h	208	1265	1195	248	1305	1228	222	1235	1152	248	1261	1275
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	22.8	16.1	16.2	22.4	15.2	15.3	22.6	15.1	15.2	22.3	13.9	13.9
Incr Delay (d2), s/veh	5.2	0.6	0.7	6.6	0.4	0.5	5.3	0.7	0.8	7.4	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	0.7	1.3	1.3	1.1	1.2	1.2	0.8	1.9	1.8	1.3	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	16.7	16.8	28.9	15.7	15.8	28.0	15.8	16.0	29.7	14.3	14.3
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		363			376			506			442	
Approach Delay, s/veh		18.4			18.8			17.4			17.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	17.8	7.7	15.8	7.1	18.7	6.8	16.7
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 6.8	34.0	* 6.8	34.8	* 6.1	34.7	* 5.7	35.9
Max Q Clear Time (g_c+I1), s	4.7	7.4	4.4	5.8	3.7	5.7	3.4	5.4
Green Ext Time (p_c), s	0.0	2.7	0.0	1.8	0.0	2.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	34	302	52	19	216	16	38	12	40	18	24	62
Future Vol, veh/h	34	302	52	19	216	16	38	12	40	18	24	62
Conflicting Peds, #/hr	13	0	10	10	0	13	19	0	1	1	0	19
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	37	332	57	21	237	18	42	13	44	20	26	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	268	0	0	399	0	0	638	755	206	549	774	160
Stage 1	-	-	-	-	-	-	445	445	-	301	301	-
Stage 2	-	-	-	-	-	-	193	310	-	248	473	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1300	-	-	1163	-	-	363	338	803	421	330	860
Stage 1	-	-	-	-	-	-	565	575	-	686	666	-
Stage 2	-	-	-	-	-	-	793	660	-	737	559	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1284	-	-	1152	-	-	292	315	795	366	308	834
Mov Cap-2 Maneuver	-	-	-	-	-	-	292	315	-	366	308	-
Stage 1	-	-	-	-	-	-	544	553	-	658	646	-
Stage 2	-	-	-	-	-	-	673	640	-	659	537	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	16.5	14
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	412	1284	-	-	1152	-	-	516
HCM Lane V/C Ratio	0.24	0.029	-	-	0.018	-	-	0.221
HCM Control Delay (s)	16.5	7.9	-	-	8.2	-	-	14
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.8

HCM 6th TWSC
4: Falcon Drive & Buckhorn Drive

Existing AM Peak
02/27/2019

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	22	19	10	58	96	8
Future Vol, veh/h	22	19	10	58	96	8
Conflicting Peds, #/hr	38	0	0	38	5	101
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	71	71	71	71	71	71
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	31	27	14	82	135	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	134	0	-	0	187	194
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	94	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1457	-	-	-	804	850
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	932	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1404	-	-	-	731	740
Mov Cap-2 Maneuver	-	-	-	-	731	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	898	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1404	-	-	-	732
HCM Lane V/C Ratio	0.022	-	-	-	0.2
HCM Control Delay (s)	7.6	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection	
Int Delay, s/veh	6.9

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	71	383	9	15	269	24	19	5	34	51	3	110
Future Vol, veh/h	71	383	9	15	269	24	19	5	34	51	3	110
Conflicting Peds, #/hr	18	0	14	14	0	18	13	0	1	1	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	99	532	13	21	374	33	26	7	47	71	4	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	425	0	0	559	0	0	995	1218	288	920	1208	235
Stage 1	-	-	-	-	-	-	751	751	-	451	451	-
Stage 2	-	-	-	-	-	-	244	467	-	469	757	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1138	-	-	1015	-	-	200	181	712	227	183	770
Stage 1	-	-	-	-	-	-	371	419	-	560	572	-
Stage 2	-	-	-	-	-	-	741	563	-	547	416	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1118	-	-	1001	-	-	139	157	702	184	158	747
Mov Cap-2 Maneuver	-	-	-	-	-	-	139	157	-	184	158	-
Stage 1	-	-	-	-	-	-	334	377	-	502	550	-
Stage 2	-	-	-	-	-	-	566	542	-	456	374	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.3	0.4	24.2	29.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	267	1001	-	-	1118	-	-	370
HCM Lane V/C Ratio	0.302	0.021	-	-	0.088	-	-	0.616
HCM Control Delay (s)	24.2	8.7	-	-	8.5	-	-	29.1
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.3	-	-	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	33	211	51	96	263	107	56	223	162	68	197	19
Future Volume (veh/h)	33	211	51	96	263	107	56	223	162	68	197	19
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	34	220	53	100	274	111	58	232	169	71	205	20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	68	615	145	139	634	250	101	546	380	115	923	89
Arrive On Green	0.04	0.21	0.21	0.08	0.25	0.25	0.06	0.27	0.27	0.06	0.28	0.28
Sat Flow, veh/h	1795	2868	675	1795	2499	986	1795	2006	1395	1795	3296	318
Grp Volume(v), veh/h	34	135	138	100	194	191	58	206	195	71	110	115
Grp Sat Flow(s),veh/h/ln	1795	1791	1752	1795	1791	1694	1795	1791	1610	1795	1791	1823
Q Serve(g_s), s	0.9	3.0	3.2	2.6	4.3	4.5	1.5	4.5	4.7	1.8	2.2	2.3
Cycle Q Clear(g_c), s	0.9	3.0	3.2	2.6	4.3	4.5	1.5	4.5	4.7	1.8	2.2	2.3
Prop In Lane	1.00		0.39	1.00		0.58	1.00		0.87	1.00		0.17
Lane Grp Cap(c), veh/h	68	384	376	139	454	430	101	488	438	115	502	511
V/C Ratio(X)	0.50	0.35	0.37	0.72	0.43	0.44	0.57	0.42	0.44	0.62	0.22	0.22
Avail Cap(c_a), veh/h	231	1317	1288	296	1381	1306	212	1286	1156	220	1294	1317
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	22.3	15.8	15.8	21.3	14.8	14.9	21.8	14.2	14.3	21.6	13.1	13.1
Incr Delay (d2), s/veh	5.5	0.6	0.6	6.9	0.6	0.7	5.0	0.6	0.7	5.3	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	0.4	1.1	1.1	1.2	1.5	1.5	0.7	1.6	1.5	0.8	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	16.3	16.4	28.2	15.4	15.6	26.8	14.7	15.0	26.9	13.3	13.3
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		307			485			459			296	
Approach Delay, s/veh		17.7			18.1			16.4			16.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	17.5	7.9	14.8	6.9	17.9	6.0	16.6
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 5.8	34.0	* 7.8	34.8	* 5.6	34.2	* 6.1	36.5
Max Q Clear Time (g_c+I1), s	3.8	6.7	4.6	5.2	3.5	4.3	2.9	6.5
Green Ext Time (p_c), s	0.0	2.5	0.1	1.6	0.0	1.2	0.0	2.3

Intersection Summary			
HCM 6th Ctrl Delay			17.2
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Traffic Vol, veh/h	67	327	43	30	404	29	19	7	44	7	3	41
Future Vol, veh/h	67	327	43	30	404	29	19	7	44	7	3	41
Conflicting Peds, #/hr	10	0	7	7	0	10	3	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	72	352	46	32	434	31	20	8	47	8	3	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	475	0	0	405	0	0	812	1065	206	848	1073	246
Stage 1	-	-	-	-	-	-	526	526	-	524	524	-
Stage 2	-	-	-	-	-	-	286	539	-	324	549	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1090	-	-	1157	-	-	272	223	803	256	220	757
Stage 1	-	-	-	-	-	-	506	530	-	507	531	-
Stage 2	-	-	-	-	-	-	700	523	-	665	517	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1080	-	-	1149	-	-	233	199	798	215	196	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	233	199	-	215	196	-
Stage 1	-	-	-	-	-	-	469	491	-	468	511	-
Stage 2	-	-	-	-	-	-	635	503	-	575	479	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.5	15.8	13.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	407	1080	-	-	1149	-	-	497
HCM Lane V/C Ratio	0.185	0.067	-	-	0.028	-	-	0.11
HCM Control Delay (s)	15.8	8.6	-	-	8.2	-	-	13.1
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.1	-	-	0.4

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	15	11	29	38	20	15
Future Vol, veh/h	15	11	29	38	20	15
Conflicting Peds, #/hr	8	0	0	8	4	15
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	80	80	80	80	80	80
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	19	14	36	48	25	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	92	0	-	0	124	83
Stage 1	-	-	-	-	68	-
Stage 2	-	-	-	-	56	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1509	-	-	-	873	979
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1498	-	-	-	848	958
Mov Cap-2 Maneuver	-	-	-	-	848	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	961	-

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1498	-	-	-	892
HCM Lane V/C Ratio	0.013	-	-	-	0.049
HCM Control Delay (s)	7.4	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.8

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	36	250	16	52	374	26	11	4	25	22	4	46
Future Vol, veh/h	36	250	16	52	374	26	11	4	25	22	4	46
Conflicting Peds, #/hr	19	0	14	14	0	19	9	0	6	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	41	284	18	59	425	30	13	5	28	25	5	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	474	0	0	316	0	0	731	981	171	810	975	256
Stage 1	-	-	-	-	-	-	389	389	-	577	577	-
Stage 2	-	-	-	-	-	-	342	592	-	233	398	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1091	-	-	1248	-	-	311	250	846	273	252	746
Stage 1	-	-	-	-	-	-	609	609	-	472	502	-
Stage 2	-	-	-	-	-	-	649	495	-	752	604	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1071	-	-	1231	-	-	260	222	830	237	224	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	222	-	237	224	-
Stage 1	-	-	-	-	-	-	578	578	-	446	469	-
Stage 2	-	-	-	-	-	-	563	463	-	689	573	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1	0.9	14.1	15.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	442	1231	-	-	1071	-	-	414
HCM Lane V/C Ratio	0.103	0.048	-	-	0.038	-	-	0.198
HCM Control Delay (s)	14.1	8.1	-	-	8.5	-	-	15.8
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0.1	-	-	0.7

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	68	112	118	95	74	77	72	90	108	134	122	86
Average Queue (ft)	24	44	59	42	38	46	31	47	63	69	58	39
95th Queue (ft)	51	83	109	85	69	75	59	81	94	123	101	70
Link Distance (ft)		3082	3082		796	796		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	53	30	31	30	31	52	94	98
Average Queue (ft)	9	2	4	9	3	3	37	38
95th Queue (ft)	34	14	19	31	18	20	63	66
Link Distance (ft)		796	796		1013	1013	903	1775
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	185			175				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	31	31	66
Average Queue (ft)	5	1	26
95th Queue (ft)	24	10	47
Link Distance (ft)	372	518	903
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	51	31	31	31	53	52	74	135
Average Queue (ft)	20	2	2	7	3	5	29	46
95th Queue (ft)	45	15	15	27	21	30	56	84
Link Distance (ft)		875	875		1634	1634	381	1145
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	155			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	71	90	113	127	132	138	72	128	177	94	112	132
Average Queue (ft)	23	41	46	71	64	65	34	44	70	38	49	28
95th Queue (ft)	58	71	89	118	112	120	68	86	137	79	79	72
Link Distance (ft)		3082	3082		796	796		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	WB	WB	WB	NB	SB
Directions Served	L	L	T	TR	LTR	LTR
Maximum Queue (ft)	30	30	30	31	94	72
Average Queue (ft)	15	4	1	3	34	29
95th Queue (ft)	38	20	10	16	67	58
Link Distance (ft)			1013	1013	903	1775
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	185	175				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	50
Average Queue (ft)	2	15
95th Queue (ft)	15	38
Link Distance (ft)	372	903
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	28	31	80	31	30	52	52	56
Average Queue (ft)	2	3	5	13	3	4	25	29
95th Queue (ft)	13	18	31	37	18	27	46	55
Link Distance (ft)		875	875		1634	1634	381	1145
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	155			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 0

Appendix E: Existing plus Project Traffic Conditions

HCM 6th Signalized Intersection Summary
1: Freedom Parkway & Sanborn Road

Existing plus Project AM Peak
02/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	45	197	75	75	178	79	52	252	121	89	257	31
Future Volume (veh/h)	45	197	75	75	178	79	52	252	121	89	257	31
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	54	235	89	89	212	94	62	300	144	106	306	37
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	95	591	217	128	607	259	104	630	295	139	922	111
Arrive On Green	0.05	0.23	0.23	0.07	0.25	0.25	0.06	0.27	0.27	0.08	0.29	0.29
Sat Flow, veh/h	1795	2554	938	1795	2435	1039	1795	2358	1103	1795	3217	385
Grp Volume(v), veh/h	54	163	161	89	154	152	62	226	218	106	169	174
Grp Sat Flow(s),veh/h/ln	1795	1791	1700	1795	1791	1683	1795	1791	1670	1795	1791	1811
Q Serve(g_s), s	1.5	3.8	4.0	2.4	3.5	3.7	1.7	5.3	5.5	2.9	3.7	3.8
Cycle Q Clear(g_c), s	1.5	3.8	4.0	2.4	3.5	3.7	1.7	5.3	5.5	2.9	3.7	3.8
Prop In Lane	1.00		0.55	1.00		0.62	1.00		0.66	1.00		0.21
Lane Grp Cap(c), veh/h	95	414	393	128	447	420	104	479	447	139	514	519
V/C Ratio(X)	0.57	0.39	0.41	0.70	0.34	0.36	0.60	0.47	0.49	0.76	0.33	0.33
Avail Cap(c_a), veh/h	205	1276	1211	216	1286	1209	220	1222	1139	249	1250	1265
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	23.1	16.2	16.3	22.6	15.4	15.4	22.9	15.3	15.4	22.6	14.0	14.0
Incr Delay (d2), s/veh	5.3	0.6	0.7	6.7	0.5	0.5	5.4	0.7	0.8	8.4	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	0.7	1.4	1.4	1.1	1.3	1.3	0.8	1.9	1.9	1.4	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	16.8	17.0	29.3	15.8	16.0	28.3	16.0	16.2	31.0	14.4	14.4
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		378			395			506			449	
Approach Delay, s/veh		18.5			18.9			17.6			18.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	17.9	7.7	16.1	7.1	18.9	6.8	17.0
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 6.9	34.0	* 6	35.5	* 6.1	34.8	* 5.7	35.8
Max Q Clear Time (g_c+I1), s	4.9	7.5	4.4	6.0	3.7	5.8	3.5	5.7
Green Ext Time (p_c), s	0.0	2.7	0.0	1.9	0.0	2.0	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	34	302	70	19	216	16	54	13	41	18	25	62
Future Vol, veh/h	34	302	70	19	216	16	54	13	41	18	25	62
Conflicting Peds, #/hr	13	0	10	10	0	13	19	0	1	1	0	19
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	37	332	77	21	237	18	59	14	45	20	27	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	268	0	0	419	0	0	648	765	216	549	794	160
Stage 1	-	-	-	-	-	-	455	455	-	301	301	-
Stage 2	-	-	-	-	-	-	193	310	-	248	493	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1300	-	-	1144	-	-	357	334	792	421	321	860
Stage 1	-	-	-	-	-	-	557	570	-	686	666	-
Stage 2	-	-	-	-	-	-	793	660	-	737	548	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1284	-	-	1133	-	-	286	311	784	364	299	834
Mov Cap-2 Maneuver	-	-	-	-	-	-	286	311	-	364	299	-
Stage 1	-	-	-	-	-	-	536	548	-	658	645	-
Stage 2	-	-	-	-	-	-	672	640	-	656	527	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	18.6	14.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	382	1284	-	-	1133	-	-	506
HCM Lane V/C Ratio	0.311	0.029	-	-	0.018	-	-	0.228
HCM Control Delay (s)	18.6	7.9	-	-	8.2	-	-	14.2
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0.1	-	-	0.9

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations	↰↱			↑	↑	
Traffic Vol, veh/h	2	12	0	126	89	0
Future Vol, veh/h	2	12	0	126	89	0
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	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	17	0	177	125	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	302	125	-	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	177	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	-	-
Pot Cap-1 Maneuver	688	923	0	-	-	0
Stage 1	898	-	0	-	-	0
Stage 2	851	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	688	923	-	-	-	-
Mov Cap-2 Maneuver	688	-	-	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	WB		SE		NW	
HCM Control Delay, s	9.2		0		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NWT	WBLn1	SET
Capacity (veh/h)	-	880	-
HCM Lane V/C Ratio	-	0.022	-
HCM Control Delay (s)	-	9.2	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

4: Falcon Drive & Buckhorn Drive

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	22	26	15	65	117	10
Future Vol, veh/h	22	26	15	65	117	10
Conflicting Peds, #/hr	38	0	0	38	5	101
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	71	71	71	71	71	71
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	31	37	21	92	165	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	151	0	-	0	209	206
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1436	-	-	-	782	837
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	923	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1384	-	-	-	710	729
Mov Cap-2 Maneuver	-	-	-	-	710	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	890	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1384	-	-	-	711
HCM Lane V/C Ratio	0.022	-	-	-	0.252
HCM Control Delay (s)	7.7	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Intersection	
Int Delay, s/veh	7.9

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	71	383	9	15	269	31	19	5	34	58	3	110
Future Vol, veh/h	71	383	9	15	269	31	19	5	34	58	3	110
Conflicting Peds, #/hr	18	0	14	14	0	18	13	0	1	1	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	99	532	13	21	374	43	26	7	47	81	4	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	435	0	0	559	0	0	995	1228	288	925	1213	240
Stage 1	-	-	-	-	-	-	751	751	-	456	456	-
Stage 2	-	-	-	-	-	-	244	477	-	469	757	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1128	-	-	1015	-	-	200	178	712	225	182	764
Stage 1	-	-	-	-	-	-	371	419	-	556	569	-
Stage 2	-	-	-	-	-	-	741	557	-	547	416	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1109	-	-	1001	-	-	139	154	702	182	157	742
Mov Cap-2 Maneuver	-	-	-	-	-	-	139	154	-	182	157	-
Stage 1	-	-	-	-	-	-	334	377	-	498	547	-
Stage 2	-	-	-	-	-	-	565	536	-	456	374	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.3	0.4	24.2	34
HCM LOS			C	D

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	267	1001	-	-	1109	-	-	352
HCM Lane V/C Ratio	0.302	0.021	-	-	0.089	-	-	0.675
HCM Control Delay (s)	24.2	8.7	-	-	8.6	-	-	34
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.3	-	-	4.7

HCM 6th Signalized Intersection Summary
1: Freedom Parkway & Sanborn Road

Existing plus Project PM Peak
02/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	33	216	51	96	270	110	56	223	162	71	197	19
Future Volume (veh/h)	33	216	51	96	270	110	56	223	162	71	197	19
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	34	225	53	100	281	115	58	232	169	74	205	20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	68	626	144	138	638	254	101	545	379	118	926	89
Arrive On Green	0.04	0.22	0.22	0.08	0.26	0.26	0.06	0.27	0.27	0.07	0.28	0.28
Sat Flow, veh/h	1795	2882	664	1795	2491	993	1795	2006	1395	1795	3296	318
Grp Volume(v), veh/h	34	138	140	100	200	196	58	206	195	74	110	115
Grp Sat Flow(s),veh/h/ln	1795	1791	1755	1795	1791	1693	1795	1791	1610	1795	1791	1823
Q Serve(g_s), s	0.9	3.1	3.2	2.6	4.5	4.6	1.5	4.5	4.8	1.9	2.3	2.3
Cycle Q Clear(g_c), s	0.9	3.1	3.2	2.6	4.5	4.6	1.5	4.5	4.8	1.9	2.3	2.3
Prop In Lane	1.00		0.38	1.00		0.59	1.00		0.87	1.00		0.17
Lane Grp Cap(c), veh/h	68	389	381	138	459	433	101	486	437	118	503	512
V/C Ratio(X)	0.50	0.35	0.37	0.72	0.44	0.45	0.57	0.42	0.45	0.63	0.22	0.22
Avail Cap(c_a), veh/h	230	1306	1280	294	1370	1295	211	1276	1147	218	1284	1307
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	22.5	15.8	15.9	21.5	14.9	14.9	22.0	14.3	14.4	21.7	13.1	13.2
Incr Delay (d2), s/veh	5.5	0.5	0.6	7.0	0.7	0.7	5.1	0.6	0.7	5.4	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	0.4	1.1	1.2	1.2	1.6	1.6	0.7	1.6	1.5	0.9	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	16.4	16.5	28.5	15.5	15.7	27.0	14.9	15.1	27.2	13.4	13.4
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		312			496			459			299	
Approach Delay, s/veh		17.7			18.2			16.5			16.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	17.6	7.9	15.0	6.9	18.0	6.0	16.8
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 5.8	34.0	* 7.8	34.8	* 5.6	34.2	* 6.1	36.5
Max Q Clear Time (g_c+I1), s	3.9	6.8	4.6	5.2	3.5	4.3	2.9	6.6
Green Ext Time (p_c), s	0.0	2.5	0.1	1.6	0.0	1.2	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Traffic Vol, veh/h	67	327	51	30	404	29	29	7	45	7	3	41
Future Vol, veh/h	67	327	51	30	404	29	29	7	45	7	3	41
Conflicting Peds, #/hr	10	0	7	7	0	10	3	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	72	352	55	32	434	31	31	8	48	8	3	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	475	0	0	414	0	0	817	1070	211	848	1082	246
Stage 1	-	-	-	-	-	-	531	531	-	524	524	-
Stage 2	-	-	-	-	-	-	286	539	-	324	558	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1090	-	-	1149	-	-	270	221	798	256	218	757
Stage 1	-	-	-	-	-	-	502	527	-	507	531	-
Stage 2	-	-	-	-	-	-	700	523	-	665	512	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1080	-	-	1141	-	-	231	197	793	215	194	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	231	197	-	215	194	-
Stage 1	-	-	-	-	-	-	465	488	-	468	511	-
Stage 2	-	-	-	-	-	-	634	503	-	574	474	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.5	17.6	13.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	372	1080	-	-	1141	-	-	496
HCM Lane V/C Ratio	0.234	0.067	-	-	0.028	-	-	0.111
HCM Control Delay (s)	17.6	8.6	-	-	8.2	-	-	13.2
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0.1	-	-	0.4

3: Buckhorn Drive & Project Driveway

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	1	8	0	44	57	0
Future Vol, veh/h	1	8	0	44	57	0
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	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	10	0	55	71	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	126	71	-	0	-	0
Stage 1	71	-	-	-	-	-
Stage 2	55	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	-	-
Pot Cap-1 Maneuver	866	989	0	-	-	0
Stage 1	949	-	0	-	-	0
Stage 2	965	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	866	989	-	-	-	-
Mov Cap-2 Maneuver	866	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	965	-	-	-	-	-

Approach	WB		SE		NW	
HCM Control Delay, s	8.7		0		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NWT	WBLn1	SET
Capacity (veh/h)	-	974	-
HCM Lane V/C Ratio	-	0.012	-
HCM Control Delay (s)	-	8.7	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	15	14	31	42	29	16
Future Vol, veh/h	15	14	31	42	29	16
Conflicting Peds, #/hr	8	0	0	8	4	15
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	80	80	80	80	80	80
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	19	18	39	53	36	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	100	0	-	0	134	89
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	60	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1499	-	-	-	862	972
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1488	-	-	-	837	951
Mov Cap-2 Maneuver	-	-	-	-	837	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1488	-	-	-	874
HCM Lane V/C Ratio	0.013	-	-	-	0.064
HCM Control Delay (s)	7.5	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.9

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	36	250	16	52	374	29	11	4	25	25	4	46
Future Vol, veh/h	36	250	16	52	374	29	11	4	25	25	4	46
Conflicting Peds, #/hr	19	0	14	14	0	19	9	0	6	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	41	284	18	59	425	33	13	5	28	28	5	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	477	0	0	316	0	0	731	984	171	812	977	257
Stage 1	-	-	-	-	-	-	389	389	-	579	579	-
Stage 2	-	-	-	-	-	-	342	595	-	233	398	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1089	-	-	1248	-	-	311	249	846	272	251	745
Stage 1	-	-	-	-	-	-	609	609	-	470	501	-
Stage 2	-	-	-	-	-	-	649	493	-	752	604	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1069	-	-	1231	-	-	260	221	830	236	223	725
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	221	-	236	223	-
Stage 1	-	-	-	-	-	-	578	578	-	444	468	-
Stage 2	-	-	-	-	-	-	563	461	-	689	573	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1	0.9	14.1	16.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	442	1231	-	-	1069	-	-	400
HCM Lane V/C Ratio	0.103	0.048	-	-	0.038	-	-	0.213
HCM Control Delay (s)	14.1	8.1	-	-	8.5	-	-	16.4
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0.1	-	-	0.8

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	71	88	118	159	116	105	90	111	136	96	119	70
Average Queue (ft)	30	45	57	51	36	48	33	48	73	49	61	40
95th Queue (ft)	57	76	90	112	70	81	63	92	135	91	96	67
Link Distance (ft)		3082	3082		798	798		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	52	53	30	31	31	72	97
Average Queue (ft)	10	3	2	3	2	43	44
95th Queue (ft)	35	21	14	19	15	63	71
Link Distance (ft)		798		1013	1013	712	1775
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	185		175				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Buckhorn Drive & Project Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	10
95th Queue (ft)	32
Link Distance (ft)	108
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	54	50	72
Average Queue (ft)	8	3	42
95th Queue (ft)	35	20	63
Link Distance (ft)	370	523	160
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	53	30	53	31	30	28	55	116
Average Queue (ft)	17	2	4	4	2	2	29	50
95th Queue (ft)	47	13	22	21	14	11	52	86
Link Distance (ft)		875	875		1634	1634	381	1145
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	155			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	72	97	95	142	116	140	109	136	159	95	115	70
Average Queue (ft)	28	49	57	56	61	68	38	51	73	44	55	35
95th Queue (ft)	63	84	92	103	102	115	79	99	133	83	100	66
Link Distance (ft)		3082	3082		797	797		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	53	29	30	22	90	75
Average Queue (ft)	25	2	8	1	39	31
95th Queue (ft)	50	12	29	7	64	57
Link Distance (ft)		797		1013	715	1775
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	185		175			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Buckhorn Drive & Project Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	13
95th Queue (ft)	37
Link Distance (ft)	100
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	32	54
Average Queue (ft)	3	25
95th Queue (ft)	19	47
Link Distance (ft)	369	158
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	54	31	31	31	31	53	53	99
Average Queue (ft)	18	2	1	11	3	3	23	38
95th Queue (ft)	47	15	10	34	18	20	46	67
Link Distance (ft)		875	875		1634	1634	381	1145
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	155			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 0

Appendix F: Near Term plus Project Traffic Conditions

HCM 6th Signalized Intersection Summary

Near Term plus Project AM Peak

1: Freedom Parkway & Sanborn Road

03/18/2019

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	45	197	75	77	178	79	52	262	124	89	260	31
Future Volume (veh/h)	45	197	75	77	178	79	52	262	124	89	260	31
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	54	235	89	92	212	94	62	312	148	106	310	37
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	95	588	216	129	608	259	103	642	297	138	936	111
Arrive On Green	0.05	0.23	0.23	0.07	0.25	0.25	0.06	0.27	0.27	0.08	0.29	0.29
Sat Flow, veh/h	1795	2554	938	1795	2435	1039	1795	2367	1096	1795	3222	381
Grp Volume(v), veh/h	54	163	161	92	154	152	62	234	226	106	171	176
Grp Sat Flow(s),veh/h/ln	1795	1791	1700	1795	1791	1683	1795	1791	1672	1795	1791	1812
Q Serve(g_s), s	1.5	3.9	4.1	2.5	3.5	3.8	1.7	5.5	5.7	2.9	3.8	3.8
Cycle Q Clear(g_c), s	1.5	3.9	4.1	2.5	3.5	3.8	1.7	5.5	5.7	2.9	3.8	3.8
Prop In Lane	1.00		0.55	1.00		0.62	1.00		0.66	1.00		0.21
Lane Grp Cap(c), veh/h	95	413	392	129	447	420	103	486	454	138	520	526
V/C Ratio(X)	0.57	0.39	0.41	0.71	0.34	0.36	0.60	0.48	0.50	0.77	0.33	0.33
Avail Cap(c_a), veh/h	203	1256	1192	221	1274	1197	218	1210	1129	246	1238	1253
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	23.3	16.4	16.5	22.8	15.5	15.6	23.2	15.4	15.5	22.8	14.0	14.0
Incr Delay (d2), s/veh	5.3	0.6	0.7	7.1	0.5	0.5	5.5	0.7	0.8	8.7	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	0.7	1.4	1.4	1.2	1.3	1.3	0.8	2.0	2.0	1.4	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.6	17.0	17.2	29.9	16.0	16.1	28.6	16.1	16.3	31.5	14.4	14.4
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		378			398			522			453	
Approach Delay, s/veh		18.7			19.2			17.7			18.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	18.3	7.8	16.2	7.1	19.2	6.8	17.2
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 6.9	34.0	* 6.2	35.3	* 6.1	34.8	* 5.7	35.8
Max Q Clear Time (g_c+I1), s	4.9	7.7	4.5	6.1	3.7	5.8	3.5	5.8
Green Ext Time (p_c), s	0.0	2.8	0.0	1.9	0.0	2.0	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Traffic Vol, veh/h	34	305	70	19	218	16	54	13	41	18	25	62
Future Vol, veh/h	34	305	70	19	218	16	54	13	41	18	25	62
Conflicting Peds, #/hr	13	0	10	10	0	13	19	0	1	1	0	19
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	37	335	77	21	240	18	59	14	45	20	27	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	271	0	0	422	0	0	653	771	217	554	800	161
Stage 1	-	-	-	-	-	-	458	458	-	304	304	-
Stage 2	-	-	-	-	-	-	195	313	-	250	496	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1297	-	-	1141	-	-	354	331	791	417	319	859
Stage 1	-	-	-	-	-	-	555	568	-	683	664	-
Stage 2	-	-	-	-	-	-	791	658	-	735	546	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1281	-	-	1130	-	-	284	308	783	361	297	833
Mov Cap-2 Maneuver	-	-	-	-	-	-	284	308	-	361	297	-
Stage 1	-	-	-	-	-	-	534	546	-	655	643	-
Stage 2	-	-	-	-	-	-	670	638	-	654	525	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	18.8	14.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	379	1281	-	-	1130	-	-	504
HCM Lane V/C Ratio	0.313	0.029	-	-	0.018	-	-	0.229
HCM Control Delay (s)	18.8	7.9	-	-	8.2	-	-	14.3
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0.1	-	-	0.9

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations	↰↱			↑	↑	
Traffic Vol, veh/h	2	12	0	126	89	0
Future Vol, veh/h	2	12	0	126	89	0
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	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	17	0	177	125	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	302	125	-	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	177	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	-	-
Pot Cap-1 Maneuver	688	923	0	-	-	0
Stage 1	898	-	0	-	-	0
Stage 2	851	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	688	923	-	-	-	-
Mov Cap-2 Maneuver	688	-	-	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	WB		SE		NW
HCM Control Delay, s	9.2		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NWT	WBLn1	SET
Capacity (veh/h)	-	880	-
HCM Lane V/C Ratio	-	0.022	-
HCM Control Delay (s)	-	9.2	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	22	26	15	65	117	10
Future Vol, veh/h	22	26	15	65	117	10
Conflicting Peds, #/hr	38	0	0	38	5	101
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	71	71	71	71	71	71
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	31	37	21	92	165	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	151	0	-	0	209	206
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1436	-	-	-	782	837
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	923	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1384	-	-	-	710	729
Mov Cap-2 Maneuver	-	-	-	-	710	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	890	-

Approach	EB		WB		SB
HCM Control Delay, s	3.5		0		11.8
HCM LOS					B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1384	-	-	-	711
HCM Lane V/C Ratio	0.022	-	-	-	0.252
HCM Control Delay (s)	7.7	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Intersection	
Int Delay, s/veh	8.2

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			↰↑↱			↰↑↱	
Traffic Vol, veh/h	71	388	9	15	282	31	19	5	34	58	3	110
Future Vol, veh/h	71	388	9	15	282	31	19	5	34	58	3	110
Conflicting Peds, #/hr	18	0	14	14	0	18	13	0	1	1	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	99	539	13	21	392	43	26	7	47	81	4	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	453	0	0	566	0	0	1011	1253	291	946	1238	249
Stage 1	-	-	-	-	-	-	758	758	-	474	474	-
Stage 2	-	-	-	-	-	-	253	495	-	472	764	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1111	-	-	1009	-	-	195	172	709	218	176	754
Stage 1	-	-	-	-	-	-	368	416	-	543	559	-
Stage 2	-	-	-	-	-	-	732	547	-	544	413	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1092	-	-	996	-	-	135	148	699	176	152	732
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	148	-	176	152	-
Stage 1	-	-	-	-	-	-	330	373	-	485	538	-
Stage 2	-	-	-	-	-	-	556	526	-	452	370	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.3	0.4	24.9	36.3
HCM LOS			C	E

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	260	996	-	-	1092	-	-	342
HCM Lane V/C Ratio	0.31	0.021	-	-	0.09	-	-	0.694
HCM Control Delay (s)	24.9	8.7	-	-	8.6	-	-	36.3
HCM Lane LOS	C	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0.3	-	-	4.9

HCM 6th Signalized Intersection Summary
1: Freedom Parkway & Sanborn Road

Near Term plus Project PM Peak
03/18/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	33	216	51	99	270	110	56	229	164	71	208	19
Future Volume (veh/h)	33	216	51	99	270	110	56	229	164	71	208	19
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	34	225	53	103	281	115	58	239	171	74	217	20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	68	622	143	140	637	254	101	553	379	117	938	86
Arrive On Green	0.04	0.22	0.22	0.08	0.26	0.26	0.06	0.27	0.27	0.07	0.28	0.28
Sat Flow, veh/h	1795	2882	664	1795	2491	993	1795	2020	1383	1795	3315	303
Grp Volume(v), veh/h	34	138	140	103	200	196	58	211	199	74	116	121
Grp Sat Flow(s),veh/h/ln	1795	1791	1755	1795	1791	1693	1795	1791	1613	1795	1791	1827
Q Serve(g_s), s	0.9	3.1	3.3	2.7	4.5	4.7	1.5	4.6	4.9	1.9	2.4	2.4
Cycle Q Clear(g_c), s	0.9	3.1	3.3	2.7	4.5	4.7	1.5	4.6	4.9	1.9	2.4	2.4
Prop In Lane	1.00		0.38	1.00		0.59	1.00		0.86	1.00		0.17
Lane Grp Cap(c), veh/h	68	386	379	140	458	433	101	490	441	117	507	517
V/C Ratio(X)	0.50	0.36	0.37	0.74	0.44	0.45	0.58	0.43	0.45	0.63	0.23	0.23
Avail Cap(c_a), veh/h	229	1301	1274	292	1364	1289	210	1271	1144	217	1278	1304
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	22.6	16.0	16.0	21.6	14.9	15.0	22.1	14.3	14.4	21.8	13.2	13.2
Incr Delay (d2), s/veh	5.5	0.6	0.6	7.3	0.7	0.7	5.1	0.6	0.7	5.5	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	0.4	1.2	1.2	1.3	1.6	1.6	0.7	1.6	1.6	0.9	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.1	16.5	16.6	29.0	15.6	15.8	27.2	14.9	15.1	27.3	13.4	13.4
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		312			499			468			311	
Approach Delay, s/veh		17.8			18.4			16.5			16.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	17.7	7.9	14.9	6.9	18.2	6.0	16.8
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 5.8	34.0	* 7.8	34.8	* 5.6	34.2	* 6.1	36.5
Max Q Clear Time (g_c+I1), s	3.9	6.9	4.7	5.3	3.5	4.4	2.9	6.7
Green Ext Time (p_c), s	0.0	2.5	0.1	1.6	0.0	1.3	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	17.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Near Term plus Project PM Peak
03/18/2019

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	67	329	51	30	407	29	29	7	45	7	3	41
Future Vol, veh/h	67	329	51	30	407	29	29	7	45	7	3	41
Conflicting Peds, #/hr	10	0	7	7	0	10	3	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	72	354	55	32	438	31	31	8	48	8	3	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	479	0	0	416	0	0	821	1076	212	853	1088	248
Stage 1	-	-	-	-	-	-	533	533	-	528	528	-
Stage 2	-	-	-	-	-	-	288	543	-	325	560	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1087	-	-	1147	-	-	268	219	796	254	216	755
Stage 1	-	-	-	-	-	-	501	526	-	504	528	-
Stage 2	-	-	-	-	-	-	698	520	-	664	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1077	-	-	1139	-	-	229	195	791	213	193	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	229	195	-	213	193	-
Stage 1	-	-	-	-	-	-	464	487	-	466	508	-
Stage 2	-	-	-	-	-	-	632	500	-	573	473	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.5	17.7	13.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	369	1077	-	-	1139	-	-	493
HCM Lane V/C Ratio	0.236	0.067	-	-	0.028	-	-	0.111
HCM Control Delay (s)	17.7	8.6	-	-	8.3	-	-	13.2
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0.1	-	-	0.4

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations	↰↱			↑	↑	
Traffic Vol, veh/h	1	8	0	44	57	0
Future Vol, veh/h	1	8	0	44	57	0
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	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	10	0	55	71	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	126	71	-	0	-	0
Stage 1	71	-	-	-	-	-
Stage 2	55	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	-	-
Pot Cap-1 Maneuver	866	989	0	-	-	0
Stage 1	949	-	0	-	-	0
Stage 2	965	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	866	989	-	-	-	-
Mov Cap-2 Maneuver	866	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	965	-	-	-	-	-

Approach	WB		SE		NW
HCM Control Delay, s	8.7		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NWT	WBLn1	SET
Capacity (veh/h)	-	974	-
HCM Lane V/C Ratio	-	0.012	-
HCM Control Delay (s)	-	8.7	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	15	14	31	42	29	16
Future Vol, veh/h	15	14	31	42	29	16
Conflicting Peds, #/hr	8	0	0	8	4	15
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	80	80	80	80	80	80
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	19	18	39	53	36	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	100	0	-	0	134	89
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	60	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1499	-	-	-	862	972
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1488	-	-	-	837	951
Mov Cap-2 Maneuver	-	-	-	-	837	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	957	-

Approach	EB		WB		SB
HCM Control Delay, s	3.9		0		9.4
HCM LOS					A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1488	-	-	-	874
HCM Lane V/C Ratio	0.013	-	-	-	0.064
HCM Control Delay (s)	7.5	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.9

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	36	264	16	52	382	29	11	4	25	25	4	46
Future Vol, veh/h	36	264	16	52	382	29	11	4	25	25	4	46
Conflicting Peds, #/hr	19	0	14	14	0	19	9	0	6	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	41	300	18	59	434	33	13	5	28	28	5	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	486	0	0	332	0	0	752	1009	179	829	1002	262
Stage 1	-	-	-	-	-	-	405	405	-	588	588	-
Stage 2	-	-	-	-	-	-	347	604	-	241	414	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1080	-	-	1231	-	-	301	240	836	265	243	740
Stage 1	-	-	-	-	-	-	596	599	-	465	497	-
Stage 2	-	-	-	-	-	-	645	489	-	744	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1060	-	-	1215	-	-	251	213	820	230	215	720
Mov Cap-2 Maneuver	-	-	-	-	-	-	251	213	-	230	215	-
Stage 1	-	-	-	-	-	-	566	568	-	439	464	-
Stage 2	-	-	-	-	-	-	559	457	-	681	564	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1	0.9	14.4	16.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	430	1215	-	-	1060	-	-	392
HCM Lane V/C Ratio	0.106	0.049	-	-	0.039	-	-	0.217
HCM Control Delay (s)	14.4	8.1	-	-	8.5	-	-	16.7
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0.1	-	-	0.8

Intersection	
Int Delay, s/veh	5.8

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥		↰	↱	
Traffic Vol, veh/h	71	388	9	15	282	31	19	5	34	58	3	110
Future Vol, veh/h	71	388	9	15	282	31	19	5	34	58	3	110
Conflicting Peds, #/hr	18	0	14	14	0	18	13	0	1	1	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	99	539	13	21	392	43	26	7	47	81	4	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	453	0	0	566	0	0	1011	1253	291	946	1238	249
Stage 1	-	-	-	-	-	-	758	758	-	474	474	-
Stage 2	-	-	-	-	-	-	253	495	-	472	764	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1111	-	-	1009	-	-	195	172	709	218	176	754
Stage 1	-	-	-	-	-	-	368	416	-	543	559	-
Stage 2	-	-	-	-	-	-	732	547	-	544	413	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1092	-	-	996	-	-	135	148	699	176	152	732
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	148	-	176	152	-
Stage 1	-	-	-	-	-	-	330	373	-	485	538	-
Stage 2	-	-	-	-	-	-	556	526	-	452	370	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.3	0.4	24.9	22.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1	SWLn2
Capacity (veh/h)	260	996	-	-	1092	-	-	176	665
HCM Lane V/C Ratio	0.31	0.021	-	-	0.09	-	-	0.458	0.236
HCM Control Delay (s)	24.9	8.7	-	-	8.6	-	-	41.6	12.1
HCM Lane LOS	C	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0.3	-	-	2.1	0.9

Intersection	
Int Delay, s/veh	2.7

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥		↰	↱	
Traffic Vol, veh/h	36	264	16	52	382	29	11	4	25	25	4	46
Future Vol, veh/h	36	264	16	52	382	29	11	4	25	25	4	46
Conflicting Peds, #/hr	19	0	14	14	0	19	9	0	6	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	41	300	18	59	434	33	13	5	28	28	5	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	486	0	0	332	0	0	752	1009	179	829	1002	262
Stage 1	-	-	-	-	-	-	405	405	-	588	588	-
Stage 2	-	-	-	-	-	-	347	604	-	241	414	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1080	-	-	1231	-	-	301	240	836	265	243	740
Stage 1	-	-	-	-	-	-	596	599	-	465	497	-
Stage 2	-	-	-	-	-	-	645	489	-	744	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1060	-	-	1215	-	-	251	213	820	230	215	720
Mov Cap-2 Maneuver	-	-	-	-	-	-	251	213	-	230	215	-
Stage 1	-	-	-	-	-	-	566	568	-	439	464	-
Stage 2	-	-	-	-	-	-	559	457	-	681	564	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1	0.9	14.4	15.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1	SWLn2
Capacity (veh/h)	430	1215	-	-	1060	-	-	230	606
HCM Lane V/C Ratio	0.106	0.049	-	-	0.039	-	-	0.124	0.094
HCM Control Delay (s)	14.4	8.1	-	-	8.5	-	-	22.8	11.6
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0.1	-	-	0.4	0.3

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	133	188	170	114	112	114	134	198	240	134	179	146
Average Queue (ft)	39	48	66	51	41	49	47	85	121	65	85	64
95th Queue (ft)	90	110	129	101	86	91	98	156	201	119	143	115
Link Distance (ft)		3082	3082		798	798		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	LTR	LTR
Maximum Queue (ft)	55	31	53	31	50	89	97
Average Queue (ft)	12	4	5	4	2	39	43
95th Queue (ft)	39	21	29	21	18	67	75
Link Distance (ft)		798	798		1013	712	1775
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	185			175			
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Buckhorn Drive & Project Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	7
95th Queue (ft)	27
Link Distance (ft)	108
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	48	31	90
Average Queue (ft)	9	2	42
95th Queue (ft)	34	14	67
Link Distance (ft)	370	523	160
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW	SW
Directions Served	L	T	TR	L	T	TR	LTR	L	TR
Maximum Queue (ft)	54	31	53	31	31	31	52	142	102
Average Queue (ft)	17	1	3	3	2	3	23	40	42
95th Queue (ft)	47	10	21	18	15	16	46	82	72
Link Distance (ft)		869	869		1628	1628	381		1145
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	155			150				250	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	73	92	94	115	140	186	114	140	210	110	137	124
Average Queue (ft)	27	51	49	64	67	72	38	71	103	55	68	46
95th Queue (ft)	61	84	90	108	124	139	84	124	174	97	120	107
Link Distance (ft)		3082	3082		797	797		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	96	29	48	50	20	73	74
Average Queue (ft)	20	1	11	2	1	38	33
95th Queue (ft)	56	9	35	17	7	59	59
Link Distance (ft)		797		1013	1013	715	1775
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	185		175				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Buckhorn Drive & Project Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	14
95th Queue (ft)	39
Link Distance (ft)	100
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	20
95th Queue (ft)	44
Link Distance (ft)	158
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NE	SW	SW
Directions Served	L	T	TR	L	LTR	L	TR
Maximum Queue (ft)	50	31	29	53	55	56	74
Average Queue (ft)	12	2	3	15	28	20	28
95th Queue (ft)	38	15	18	44	50	46	59
Link Distance (ft)		869	869		381		1145
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	155			150		250	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 0

Appendix G: Cumulative Year 2040 No Project Traffic Conditions

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	60	234	100	100	213	91	69	335	161	104	341	41
Future Volume (veh/h)	60	234	100	100	213	91	69	335	161	104	341	41
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	70	272	116	116	248	106	80	390	187	121	397	48
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	104	583	242	149	645	267	112	685	324	156	1015	122
Arrive On Green	0.06	0.24	0.24	0.08	0.26	0.26	0.06	0.29	0.29	0.09	0.32	0.32
Sat Flow, veh/h	1795	2457	1019	1795	2460	1019	1795	2350	1111	1795	3216	386
Grp Volume(v), veh/h	70	196	192	116	178	176	80	296	281	121	220	225
Grp Sat Flow(s),veh/h/ln	1795	1791	1685	1795	1791	1688	1795	1791	1670	1795	1791	1812
Q Serve(g_s), s	2.2	5.5	5.7	3.7	4.8	5.0	2.6	8.2	8.4	3.9	5.6	5.7
Cycle Q Clear(g_c), s	2.2	5.5	5.7	3.7	4.8	5.0	2.6	8.2	8.4	3.9	5.6	5.7
Prop In Lane	1.00		0.60	1.00		0.60	1.00		0.67	1.00		0.21
Lane Grp Cap(c), veh/h	104	425	400	149	470	443	112	522	487	156	565	572
V/C Ratio(X)	0.67	0.46	0.48	0.78	0.38	0.40	0.72	0.57	0.58	0.78	0.39	0.39
Avail Cap(c_a), veh/h	203	1056	993	209	1062	1001	218	1043	973	221	1046	1058
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	26.9	19.1	19.2	26.2	17.6	17.7	26.9	17.6	17.6	26.1	15.6	15.6
Incr Delay (d2), s/veh	7.2	0.8	0.9	11.4	0.5	0.6	8.2	1.0	1.1	10.6	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	1.1	2.1	2.1	1.9	1.8	1.8	1.3	3.1	3.0	2.0	2.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	19.8	20.0	37.6	18.1	18.3	35.1	18.5	18.7	36.7	16.0	16.0
LnGrp LOS	C	B	C	D	B	B	D	B	B	D	B	B
Approach Vol, veh/h		458			470			657			566	
Approach Delay, s/veh		22.1			23.0			20.6			20.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	21.6	9.1	18.5	7.8	23.0	7.6	19.9
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 7.2	34.0	* 6.8	34.4	* 7.1	34.1	* 6.6	34.6
Max Q Clear Time (g_c+I1), s	5.9	10.4	5.7	7.7	4.6	7.7	4.2	7.0
Green Ext Time (p_c), s	0.0	3.6	0.0	2.3	0.0	2.6	0.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	21.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2: Buckhorn Drive & Sanborn Road

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Traffic Vol, veh/h	45	401	52	25	287	21	38	15	52	24	31	82
Future Vol, veh/h	45	401	52	25	287	21	38	15	52	24	31	82
Conflicting Peds, #/hr	13	0	10	10	0	13	19	0	1	1	0	19
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	49	441	57	27	315	23	42	16	57	26	34	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	351	0	0	508	0	0	826	983	260	722	1000	201
Stage 1	-	-	-	-	-	-	578	578	-	394	394	-
Stage 2	-	-	-	-	-	-	248	405	-	328	606	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1212	-	-	1060	-	-	266	249	742	316	243	809
Stage 1	-	-	-	-	-	-	471	502	-	605	606	-
Stage 2	-	-	-	-	-	-	737	599	-	662	488	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1197	-	-	1050	-	-	192	228	734	258	222	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	192	228	-	258	222	-
Stage 1	-	-	-	-	-	-	447	476	-	573	583	-
Stage 2	-	-	-	-	-	-	588	576	-	565	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	23	19
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	314	1197	-	-	1050	-	-	406
HCM Lane V/C Ratio	0.367	0.041	-	-	0.026	-	-	0.371
HCM Control Delay (s)	23	8.1	-	-	8.5	-	-	19
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0.1	-	-	1.7

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		↲↳	
Traffic Vol, veh/h	29	19	10	70	107	9
Future Vol, veh/h	29	19	10	70	107	9
Conflicting Peds, #/hr	38	0	0	38	5	101
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	72	72	72	72	72	72
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	40	26	14	97	149	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	149	0	-	0	212	202
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1439	-	-	-	779	841
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1387	-	-	-	703	733
Mov Cap-2 Maneuver	-	-	-	-	703	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	883	-

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1387	-	-	-	705
HCM Lane V/C Ratio	0.029	-	-	-	0.229
HCM Control Delay (s)	7.7	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	9.2

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	94	509	12	20	357	25	25	7	45	61	4	146
Future Vol, veh/h	94	509	12	20	357	25	25	7	45	61	4	146
Conflicting Peds, #/hr	18	0	14	14	0	18	13	0	1	1	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	109	592	14	23	415	29	29	8	52	71	5	170

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	462	0	0	620	0	0	1100	1339	318	1013	1332	253
Stage 1	-	-	-	-	-	-	831	831	-	494	494	-
Stage 2	-	-	-	-	-	-	269	508	-	519	838	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1103	-	-	963	-	-	168	153	681	195	154	750
Stage 1	-	-	-	-	-	-	332	385	-	528	547	-
Stage 2	-	-	-	-	-	-	716	539	-	511	382	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1084	-	-	950	-	-	111	130	671	152	131	728
Mov Cap-2 Maneuver	-	-	-	-	-	-	111	130	-	152	131	-
Stage 1	-	-	-	-	-	-	294	341	-	467	525	-
Stage 2	-	-	-	-	-	-	524	517	-	413	339	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.3	0.4	31.8	40.5
HCM LOS			D	E

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	222	950	-	-	1084	-	-	334
HCM Lane V/C Ratio	0.403	0.024	-	-	0.101	-	-	0.735
HCM Control Delay (s)	31.8	8.9	-	-	8.7	-	-	40.5
HCM Lane LOS	D	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.3	-	-	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	44	275	68	128	342	139	74	296	215	87	262	25
Future Volume (veh/h)	44	275	68	128	342	139	74	296	215	87	262	25
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	46	286	71	133	356	145	77	308	224	91	273	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	82	646	157	171	688	275	112	587	415	122	991	94
Arrive On Green	0.05	0.23	0.23	0.10	0.28	0.28	0.06	0.29	0.29	0.07	0.30	0.30
Sat Flow, veh/h	1795	2846	694	1795	2488	996	1795	1991	1409	1795	3304	312
Grp Volume(v), veh/h	46	178	179	133	254	247	77	276	256	91	147	152
Grp Sat Flow(s),veh/h/ln	1795	1791	1749	1795	1791	1693	1795	1791	1609	1795	1791	1825
Q Serve(g_s), s	1.4	4.8	4.9	4.0	6.7	6.9	2.3	7.2	7.4	2.8	3.5	3.6
Cycle Q Clear(g_c), s	1.4	4.8	4.9	4.0	6.7	6.9	2.3	7.2	7.4	2.8	3.5	3.6
Prop In Lane	1.00		0.40	1.00		0.59	1.00		0.88	1.00		0.17
Lane Grp Cap(c), veh/h	82	406	397	171	495	468	112	528	474	122	537	547
V/C Ratio(X)	0.56	0.44	0.45	0.78	0.51	0.53	0.69	0.52	0.54	0.75	0.27	0.28
Avail Cap(c_a), veh/h	219	1091	1066	270	1143	1080	171	1091	981	193	1114	1135
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	26.1	18.5	18.6	24.7	17.0	17.1	25.6	16.4	16.5	25.5	14.9	14.9
Incr Delay (d2), s/veh	5.9	0.7	0.8	7.3	0.8	0.9	7.2	0.8	1.0	8.8	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	0.7	1.8	1.9	1.9	2.5	2.5	1.1	2.7	2.5	1.4	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	19.3	19.4	32.0	17.8	18.0	32.9	17.2	17.5	34.4	15.2	15.2
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		403			634			609			390	
Approach Delay, s/veh		20.8			20.9			19.3			19.7	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	21.0	9.5	17.3	7.7	21.3	6.7	20.0
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 6	34.0	* 8.4	34.0	* 5.3	34.7	* 6.8	35.6
Max Q Clear Time (g_c+I1), s	4.8	9.4	6.0	6.9	4.3	5.6	3.4	8.9
Green Ext Time (p_c), s	0.0	3.3	0.1	2.1	0.0	1.7	0.0	3.1

Intersection Summary			
HCM 6th Ctrl Delay			20.1
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	89	434	49	40	537	39	19	9	57	9	4	54
Future Vol, veh/h	89	434	49	40	537	39	19	9	57	9	4	54
Conflicting Peds, #/hr	10	0	7	7	0	10	3	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	96	467	53	43	577	42	20	10	61	10	4	58

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	629	0	0	527	0	0	1073	1408	267	1125	1413	323
Stage 1	-	-	-	-	-	-	693	693	-	694	694	-
Stage 2	-	-	-	-	-	-	380	715	-	431	719	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	956	-	-	1043	-	-	176	139	734	161	138	676
Stage 1	-	-	-	-	-	-	402	445	-	402	445	-
Stage 2	-	-	-	-	-	-	617	435	-	576	433	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	947	-	-	1036	-	-	138	118	729	123	117	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	118	-	123	117	-
Stage 1	-	-	-	-	-	-	359	397	-	358	422	-
Stage 2	-	-	-	-	-	-	533	412	-	463	387	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.6	22.9	17.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	291	947	-	-	1036	-	-	356
HCM Lane V/C Ratio	0.314	0.101	-	-	0.042	-	-	0.202
HCM Control Delay (s)	22.9	9.2	-	-	8.6	-	-	17.7
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.3	0.3	-	-	0.1	-	-	0.7

4: Falcon Drive & Buckhorn Drive

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		⇆	
Traffic Vol, veh/h	20	12	37	46	20	19
Future Vol, veh/h	20	12	37	46	20	19
Conflicting Peds, #/hr	8	0	0	8	4	15
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	82	82	82	82	82	82
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	24	15	45	56	24	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	109	0	-	0	148	96
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	67	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1488	-	-	-	846	963
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	958	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1477	-	-	-	819	942
Mov Cap-2 Maneuver	-	-	-	-	819	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	950	-

Approach	EB	WB	SB
HCM Control Delay, s	4.7	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1477	-	-	-	875
HCM Lane V/C Ratio	0.017	-	-	-	0.054
HCM Control Delay (s)	7.5	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.6

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Traffic Vol, veh/h	48	332	21	69	497	32	15	5	33	26	5	61
Future Vol, veh/h	48	332	21	69	497	32	15	5	33	26	5	61
Conflicting Peds, #/hr	19	0	14	14	0	19	9	0	6	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	53	369	23	77	552	36	17	6	37	29	6	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	607	0	0	406	0	0	943	1262	216	1043	1255	322
Stage 1	-	-	-	-	-	-	501	501	-	743	743	-
Stage 2	-	-	-	-	-	-	442	761	-	300	512	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	974	-	-	1156	-	-	219	170	792	185	172	677
Stage 1	-	-	-	-	-	-	523	543	-	375	422	-
Stage 2	-	-	-	-	-	-	567	415	-	687	537	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	956	-	-	1141	-	-	170	145	777	152	147	659
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	145	-	152	147	-
Stage 1	-	-	-	-	-	-	487	507	-	348	387	-
Stage 2	-	-	-	-	-	-	464	380	-	608	501	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.1	1	18.7	22.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	321	1141	-	-	956	-	-	309
HCM Lane V/C Ratio	0.183	0.067	-	-	0.056	-	-	0.331
HCM Control Delay (s)	18.7	8.4	-	-	9	-	-	22.3
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.2	-	-	1.4

HCM 6th TWSC
5: Cougar Drive & Freedom Parkway

Cumulative Year 2040 No Project AM Peak
03/18/2019

Intersection	
Int Delay, s/veh	6.3

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✣		↰	↱	
Traffic Vol, veh/h	94	509	12	20	357	25	25	7	45	61	4	146
Future Vol, veh/h	94	509	12	20	357	25	25	7	45	61	4	146
Conflicting Peds, #/hr	18	0	14	14	0	18	13	0	1	1	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	109	592	14	23	415	29	29	8	52	71	5	170

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	462	0	0	620	0	0	1100	1339	318	1013	1332	253
Stage 1	-	-	-	-	-	-	831	831	-	494	494	-
Stage 2	-	-	-	-	-	-	269	508	-	519	838	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1103	-	-	963	-	-	168	153	681	195	154	750
Stage 1	-	-	-	-	-	-	332	385	-	528	547	-
Stage 2	-	-	-	-	-	-	716	539	-	511	382	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1084	-	-	950	-	-	111	130	671	152	131	728
Mov Cap-2 Maneuver	-	-	-	-	-	-	111	130	-	152	131	-
Stage 1	-	-	-	-	-	-	294	341	-	467	525	-
Stage 2	-	-	-	-	-	-	524	517	-	413	339	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.3	0.4	31.8	22.8
HCM LOS			D	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1	SWLn2
Capacity (veh/h)	222	950	-	-	1084	-	-	152	649
HCM Lane V/C Ratio	0.403	0.024	-	-	0.101	-	-	0.467	0.269
HCM Control Delay (s)	31.8	8.9	-	-	8.7	-	-	47.9	12.6
HCM Lane LOS	D	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.3	-	-	2.2	1.1

Intersection	
Int Delay, s/veh	3.3

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥		↰	↱	
Traffic Vol, veh/h	48	332	21	69	497	32	15	5	33	26	5	61
Future Vol, veh/h	48	332	21	69	497	32	15	5	33	26	5	61
Conflicting Peds, #/hr	19	0	14	14	0	19	9	0	6	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	53	369	23	77	552	36	17	6	37	29	6	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	607	0	0	406	0	0	943	1262	216	1043	1255	322
Stage 1	-	-	-	-	-	-	501	501	-	743	743	-
Stage 2	-	-	-	-	-	-	442	761	-	300	512	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	974	-	-	1156	-	-	219	170	792	185	172	677
Stage 1	-	-	-	-	-	-	523	543	-	375	422	-
Stage 2	-	-	-	-	-	-	567	415	-	687	537	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	956	-	-	1141	-	-	170	145	777	152	147	659
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	145	-	152	147	-
Stage 1	-	-	-	-	-	-	487	507	-	348	387	-
Stage 2	-	-	-	-	-	-	464	380	-	608	501	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.1	1	18.7	19
HCM LOS			C	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1	SWLn2
Capacity (veh/h)	321	1141	-	-	956	-	-	152	521
HCM Lane V/C Ratio	0.183	0.067	-	-	0.056	-	-	0.19	0.141
HCM Control Delay (s)	18.7	8.4	-	-	9	-	-	34.2	13
HCM Lane LOS	C	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.2	-	-	0.7	0.5

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	111	96	138	136	111	123	92	137	150	132	141	115
Average Queue (ft)	47	53	74	59	56	63	45	69	94	69	78	59
95th Queue (ft)	95	84	123	110	94	112	86	118	148	120	120	111
Link Distance (ft)		3082	3082		798	798		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	51	31	31	30	31	29	117	136
Average Queue (ft)	14	2	2	6	2	1	44	54
95th Queue (ft)	41	12	14	25	15	10	83	94
Link Distance (ft)		798	798		1013	1013	712	1775
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	185			175				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	54	22	96
Average Queue (ft)	8	1	37
95th Queue (ft)	32	7	60
Link Distance (ft)	370	523	160
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW	SW
Directions Served	L	T	TR	L	T	TR	LTR	L	TR
Maximum Queue (ft)	52	30	52	31	31	28	142	76	92
Average Queue (ft)	23	2	7	8	1	1	46	39	46
95th Queue (ft)	51	14	29	29	10	9	91	65	74
Link Distance (ft)		869	869		1628	1628	381		1145
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	155			150				250	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	131	116	178	183	134	162	119	139	195	149	115	88
Average Queue (ft)	36	59	70	92	82	98	55	61	95	62	56	42
95th Queue (ft)	96	100	127	159	126	152	102	112	161	119	95	75
Link Distance (ft)		3082	3082		797	797		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	WB	WB	WB	NB	SB
Directions Served	L	L	T	TR	LTR	LTR
Maximum Queue (ft)	74	53	31	20	76	55
Average Queue (ft)	27	13	1	1	37	32
95th Queue (ft)	58	39	10	6	61	55
Link Distance (ft)			1013	1013	715	1775
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	185	175				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	54
Average Queue (ft)	2	20
95th Queue (ft)	15	46
Link Distance (ft)	369	158
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW	SW
Directions Served	L	T	TR	L	T	TR	LTR	L	TR
Maximum Queue (ft)	54	31	31	54	31	31	53	54	56
Average Queue (ft)	18	2	2	16	2	2	24	24	32
95th Queue (ft)	44	15	15	43	14	14	50	54	55
Link Distance (ft)		869	869		1628	1628	381		1145
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	155			150				250	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Zone Summary

Zone wide Queuing Penalty: 0

Appendix H: Cumulative Year 2040 plus Project Traffic Conditions

HCM 6th Signalized Intersection Summary

Cumulative Year 2040 plus Project AM Peak

1: Freedom Parkway & Sanborn Road

03/18/2019

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	60	246	100	100	223	97	69	335	161	110	341	41
Future Volume (veh/h)	60	246	100	100	223	97	69	335	161	110	341	41
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	70	286	116	116	259	113	80	390	187	128	397	48
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	104	598	236	149	647	274	111	680	321	164	1027	123
Arrive On Green	0.06	0.24	0.24	0.08	0.27	0.27	0.06	0.29	0.29	0.09	0.32	0.32
Sat Flow, veh/h	1795	2496	987	1795	2442	1034	1795	2350	1111	1795	3216	386
Grp Volume(v), veh/h	70	203	199	116	188	184	80	296	281	128	220	225
Grp Sat Flow(s),veh/h/ln	1795	1791	1691	1795	1791	1685	1795	1791	1670	1795	1791	1812
Q Serve(g_s), s	2.3	5.8	6.0	3.8	5.1	5.4	2.6	8.3	8.5	4.1	5.7	5.7
Cycle Q Clear(g_c), s	2.3	5.8	6.0	3.8	5.1	5.4	2.6	8.3	8.5	4.1	5.7	5.7
Prop In Lane	1.00		0.58	1.00		0.61	1.00		0.67	1.00		0.21
Lane Grp Cap(c), veh/h	104	429	405	149	475	447	111	518	483	164	572	578
V/C Ratio(X)	0.68	0.47	0.49	0.78	0.40	0.41	0.72	0.57	0.58	0.78	0.38	0.39
Avail Cap(c_a), veh/h	200	1031	974	206	1038	976	218	1025	956	224	1031	1043
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	27.4	19.4	19.5	26.7	17.9	18.0	27.4	18.0	18.0	26.4	15.7	15.7
Incr Delay (d2), s/veh	7.5	0.8	0.9	12.0	0.5	0.6	8.5	1.0	1.1	11.5	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	1.1	2.3	2.2	2.0	2.0	1.9	1.3	3.2	3.1	2.2	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	20.2	20.4	38.6	18.5	18.6	35.9	18.9	19.1	37.8	16.1	16.1
LnGrp LOS	C	C	C	D	B	B	D	B	B	D	B	B
Approach Vol, veh/h		472			488			657			573	
Approach Delay, s/veh		22.4			23.3			21.1			21.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	21.8	9.1	18.8	7.9	23.6	7.6	20.3
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 7.4	34.0	* 6.8	34.2	* 7.2	34.2	* 6.6	34.4
Max Q Clear Time (g_c+I1), s	6.1	10.5	5.8	8.0	4.6	7.7	4.3	7.4
Green Ext Time (p_c), s	0.0	3.6	0.0	2.4	0.0	2.6	0.0	2.2

Intersection Summary			
HCM 6th Ctrl Delay			21.8
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Traffic Vol, veh/h	45	401	70	25	287	21	54	16	53	24	32	82
Future Vol, veh/h	45	401	70	25	287	21	54	16	53	24	32	82
Conflicting Peds, #/hr	13	0	10	10	0	13	19	0	1	1	0	19
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	49	441	77	27	315	23	59	18	58	26	35	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	351	0	0	528	0	0	836	993	270	723	1020	201
Stage 1	-	-	-	-	-	-	588	588	-	394	394	-
Stage 2	-	-	-	-	-	-	248	405	-	329	626	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1212	-	-	1042	-	-	262	246	731	316	237	809
Stage 1	-	-	-	-	-	-	465	497	-	605	606	-
Stage 2	-	-	-	-	-	-	737	599	-	661	477	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1197	-	-	1032	-	-	188	225	723	256	217	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	188	225	-	256	217	-
Stage 1	-	-	-	-	-	-	442	472	-	573	583	-
Stage 2	-	-	-	-	-	-	586	576	-	561	453	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	28.5	19.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	285	1197	-	-	1032	-	-	399
HCM Lane V/C Ratio	0.474	0.041	-	-	0.027	-	-	0.38
HCM Control Delay (s)	28.5	8.1	-	-	8.6	-	-	19.4
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.4	0.1	-	-	0.1	-	-	1.7

3: Buckhorn Drive & Project Driveway

03/18/2019

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations	↰↱			↑	↑	
Traffic Vol, veh/h	2	12	0	140	109	0
Future Vol, veh/h	2	12	0	140	109	0
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	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	17	0	194	151	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	345	151	-	0	-	0
Stage 1	151	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	-	-
Pot Cap-1 Maneuver	650	893	0	-	-	0
Stage 1	874	-	0	-	-	0
Stage 2	836	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	650	893	-	-	-	-
Mov Cap-2 Maneuver	650	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	836	-	-	-	-	-

Approach	WB		SE		NW
HCM Control Delay, s	9.3		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NWT	WBLn1	SET
Capacity (veh/h)	-	848	-
HCM Lane V/C Ratio	-	0.023	-
HCM Control Delay (s)	-	9.3	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	29	26	15	77	128	11
Future Vol, veh/h	29	26	15	77	128	11
Conflicting Peds, #/hr	38	0	0	38	5	101
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	72	72	72	72	72	72
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	40	36	21	107	178	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	166	0	-	0	234	214
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	121	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1418	-	-	-	756	829
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	907	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1367	-	-	-	681	722
Mov Cap-2 Maneuver	-	-	-	-	681	-
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	874	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1367	-	-	-	684
HCM Lane V/C Ratio	0.029	-	-	-	0.282
HCM Control Delay (s)	7.7	0	-	-	12.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2

Intersection	
Int Delay, s/veh	10.6

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	94	509	12	20	357	32	25	7	45	68	4	146
Future Vol, veh/h	94	509	12	20	357	32	25	7	45	68	4	146
Conflicting Peds, #/hr	18	0	14	14	0	18	13	0	1	1	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	109	592	14	23	415	37	29	8	52	79	5	170

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	470	0	0	620	0	0	1100	1347	318	1017	1336	257
Stage 1	-	-	-	-	-	-	831	831	-	498	498	-
Stage 2	-	-	-	-	-	-	269	516	-	519	838	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1095	-	-	963	-	-	168	151	681	193	154	745
Stage 1	-	-	-	-	-	-	332	385	-	525	545	-
Stage 2	-	-	-	-	-	-	716	535	-	511	382	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1076	-	-	950	-	-	110	129	671	151	131	723
Mov Cap-2 Maneuver	-	-	-	-	-	-	110	129	-	151	131	-
Stage 1	-	-	-	-	-	-	294	341	-	464	523	-
Stage 2	-	-	-	-	-	-	523	513	-	413	339	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.3	0.4	32	48.6
HCM LOS			D	E

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	221	950	-	-	1076	-	-	319
HCM Lane V/C Ratio	0.405	0.024	-	-	0.102	-	-	0.795
HCM Control Delay (s)	32	8.9	-	-	8.7	-	-	48.6
HCM Lane LOS	D	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.3	-	-	6.5

1: Freedom Parkway & Sanborn Road

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	44	280	68	128	349	142	74	296	215	90	262	25
Future Volume (veh/h)	44	280	68	128	349	142	74	296	215	90	262	25
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		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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	46	292	71	133	364	148	77	308	224	94	273	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	82	652	156	171	692	277	112	585	414	123	992	94
Arrive On Green	0.05	0.23	0.23	0.10	0.28	0.28	0.06	0.29	0.29	0.07	0.30	0.30
Sat Flow, veh/h	1795	2859	683	1795	2489	995	1795	1991	1409	1795	3304	312
Grp Volume(v), veh/h	46	181	182	133	260	252	77	276	256	94	147	152
Grp Sat Flow(s),veh/h/ln	1795	1791	1751	1795	1791	1693	1795	1791	1609	1795	1791	1825
Q Serve(g_s), s	1.4	4.9	5.0	4.1	6.9	7.1	2.4	7.2	7.5	2.9	3.5	3.6
Cycle Q Clear(g_c), s	1.4	4.9	5.0	4.1	6.9	7.1	2.4	7.2	7.5	2.9	3.5	3.6
Prop In Lane	1.00		0.39	1.00		0.59	1.00		0.88	1.00		0.17
Lane Grp Cap(c), veh/h	82	409	400	171	498	471	112	527	473	123	538	548
V/C Ratio(X)	0.56	0.44	0.46	0.78	0.52	0.54	0.69	0.52	0.54	0.76	0.27	0.28
Avail Cap(c_a), veh/h	218	1096	1071	259	1137	1075	170	1086	976	192	1108	1129
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	26.2	18.6	18.6	24.8	17.1	17.2	25.8	16.5	16.6	25.7	15.0	15.0
Incr Delay (d2), s/veh	5.9	0.8	0.8	8.0	0.9	0.9	7.3	0.8	1.0	9.4	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	0.7	1.9	1.9	2.0	2.6	2.5	1.2	2.7	2.5	1.5	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	19.3	19.4	32.8	18.0	18.1	33.1	17.3	17.6	35.1	15.2	15.2
LnGrp LOS	C	B	B	C	B	B	C	B	B	D	B	B
Approach Vol, veh/h		409			645			609			393	
Approach Delay, s/veh		20.8			21.1			19.4			20.0	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	21.1	9.5	17.4	7.7	21.4	6.8	20.2
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6	* 4.2	4.6
Max Green Setting (Gmax), s	* 6	34.0	* 8.1	34.3	* 5.3	34.7	* 6.8	35.6
Max Q Clear Time (g_c+I1), s	4.9	9.5	6.1	7.0	4.4	5.6	3.4	9.1
Green Ext Time (p_c), s	0.0	3.3	0.1	2.1	0.0	1.7	0.0	3.2

Intersection Summary	
HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Traffic Vol, veh/h	89	434	57	40	537	39	29	9	58	9	4	54
Future Vol, veh/h	89	434	57	40	537	39	29	9	58	9	4	54
Conflicting Peds, #/hr	10	0	7	7	0	10	3	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	96	467	61	43	577	42	31	10	62	10	4	58

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	629	0	0	535	0	0	1077	1412	271	1125	1421	323
Stage 1	-	-	-	-	-	-	697	697	-	694	694	-
Stage 2	-	-	-	-	-	-	380	715	-	431	727	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	956	-	-	1036	-	-	175	138	730	161	136	676
Stage 1	-	-	-	-	-	-	400	443	-	402	445	-
Stage 2	-	-	-	-	-	-	617	435	-	576	430	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	947	-	-	1029	-	-	138	117	725	122	115	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	117	-	122	115	-
Stage 1	-	-	-	-	-	-	357	396	-	358	422	-
Stage 2	-	-	-	-	-	-	533	412	-	462	384	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.6	27.4	17.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	262	947	-	-	1029	-	-	354
HCM Lane V/C Ratio	0.394	0.101	-	-	0.042	-	-	0.204
HCM Control Delay (s)	27.4	9.2	-	-	8.7	-	-	17.7
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.8	0.3	-	-	0.1	-	-	0.8

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations	↖↗			↑	↑	
Traffic Vol, veh/h	1	8	0	47	70	0
Future Vol, veh/h	1	8	0	47	70	0
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	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	10	0	57	85	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	142	85	-	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	57	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	-	-
Pot Cap-1 Maneuver	848	971	0	-	-	0
Stage 1	936	-	0	-	-	0
Stage 2	963	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	848	971	-	-	-	-
Mov Cap-2 Maneuver	848	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	WB		SE		NW
HCM Control Delay, s	8.8		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NWT	WBLn1	SET
Capacity (veh/h)	-	956	-
HCM Lane V/C Ratio	-	0.011	-
HCM Control Delay (s)	-	8.8	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	20	15	39	50	29	20
Future Vol, veh/h	20	15	39	50	29	20
Conflicting Peds, #/hr	8	0	0	8	4	15
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	82	82	82	82	82	82
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	24	18	48	61	35	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	117	0	-	0	157	102
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	70	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1478	-	-	-	837	956
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1467	-	-	-	809	935
Mov Cap-2 Maneuver	-	-	-	-	809	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	947	-

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1467	-	-	-	856
HCM Lane V/C Ratio	0.017	-	-	-	0.07
HCM Control Delay (s)	7.5	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.7

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Traffic Vol, veh/h	48	332	21	69	497	35	15	5	33	29	5	61
Future Vol, veh/h	48	332	21	69	497	35	15	5	33	29	5	61
Conflicting Peds, #/hr	19	0	14	14	0	19	9	0	6	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	53	369	23	77	552	39	17	6	37	32	6	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	610	0	0	406	0	0	943	1265	216	1045	1257	324
Stage 1	-	-	-	-	-	-	501	501	-	745	745	-
Stage 2	-	-	-	-	-	-	442	764	-	300	512	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	972	-	-	1156	-	-	219	169	792	184	171	675
Stage 1	-	-	-	-	-	-	523	543	-	374	422	-
Stage 2	-	-	-	-	-	-	567	413	-	687	537	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	954	-	-	1141	-	-	170	144	777	151	146	657
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	144	-	151	146	-
Stage 1	-	-	-	-	-	-	487	506	-	347	387	-
Stage 2	-	-	-	-	-	-	463	378	-	608	500	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.1	1	18.8	23.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	320	1141	-	-	954	-	-	298
HCM Lane V/C Ratio	0.184	0.067	-	-	0.056	-	-	0.354
HCM Control Delay (s)	18.8	8.4	-	-	9	-	-	23.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.2	-	-	1.5

Intersection	
Int Delay, s/veh	6.7

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✥		↰	↱	
Traffic Vol, veh/h	94	509	12	20	357	32	25	7	45	68	4	146
Future Vol, veh/h	94	509	12	20	357	32	25	7	45	68	4	146
Conflicting Peds, #/hr	18	0	14	14	0	18	13	0	1	1	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	109	592	14	23	415	37	29	8	52	79	5	170

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	470	0	0	620	0	0	1100	1347	318	1017	1336	257
Stage 1	-	-	-	-	-	-	831	831	-	498	498	-
Stage 2	-	-	-	-	-	-	269	516	-	519	838	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1095	-	-	963	-	-	168	151	681	193	154	745
Stage 1	-	-	-	-	-	-	332	385	-	525	545	-
Stage 2	-	-	-	-	-	-	716	535	-	511	382	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1076	-	-	950	-	-	110	129	671	151	131	723
Mov Cap-2 Maneuver	-	-	-	-	-	-	110	129	-	151	131	-
Stage 1	-	-	-	-	-	-	294	341	-	464	523	-
Stage 2	-	-	-	-	-	-	523	513	-	413	339	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.3	0.4	32	25
HCM LOS			D	D

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1	SWLn2
Capacity (veh/h)	221	950	-	-	1076	-	-	151	645
HCM Lane V/C Ratio	0.405	0.024	-	-	0.102	-	-	0.524	0.27
HCM Control Delay (s)	32	8.9	-	-	8.7	-	-	52.4	12.6
HCM Lane LOS	D	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.3	-	-	2.6	1.1

Intersection	
Int Delay, s/veh	3.4

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↰	↑↱		↰	↑↱			✣		↰	↱	
Traffic Vol, veh/h	48	332	21	69	497	35	15	5	33	29	5	61
Future Vol, veh/h	48	332	21	69	497	35	15	5	33	29	5	61
Conflicting Peds, #/hr	19	0	14	14	0	19	9	0	6	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	150	-	-	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	53	369	23	77	552	39	17	6	37	32	6	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	610	0	0	406	0	0	943	1265	216	1045	1257	324
Stage 1	-	-	-	-	-	-	501	501	-	745	745	-
Stage 2	-	-	-	-	-	-	442	764	-	300	512	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	972	-	-	1156	-	-	219	169	792	184	171	675
Stage 1	-	-	-	-	-	-	523	543	-	374	422	-
Stage 2	-	-	-	-	-	-	567	413	-	687	537	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	954	-	-	1141	-	-	170	144	777	151	146	657
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	144	-	151	146	-
Stage 1	-	-	-	-	-	-	487	506	-	347	387	-
Stage 2	-	-	-	-	-	-	463	378	-	608	500	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	1.1	1	18.8	19.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1	SWLn2
Capacity (veh/h)	320	1141	-	-	954	-	-	151	519
HCM Lane V/C Ratio	0.184	0.067	-	-	0.056	-	-	0.213	0.141
HCM Control Delay (s)	18.8	8.4	-	-	9	-	-	35.2	13.1
HCM Lane LOS	C	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.2	-	-	0.8	0.5

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	93	116	182	117	112	134	122	155	216	277	323	309
Average Queue (ft)	42	53	72	62	59	70	38	67	93	104	91	74
95th Queue (ft)	83	92	129	97	97	114	77	120	155	220	181	168
Link Distance (ft)		3082	3082		798	798		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)										5		
Queuing Penalty (veh)										8		

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	51	31	53	53	31	31	100	119
Average Queue (ft)	15	3	3	8	4	4	49	56
95th Queue (ft)	42	18	22	31	21	21	84	95
Link Distance (ft)		798	798		1013	1013	712	1775
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	185			175				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 3: Buckhorn Drive & Project Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	55
Average Queue (ft)	11
95th Queue (ft)	36
Link Distance (ft)	108
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	51	22	54
Average Queue (ft)	6	1	36
95th Queue (ft)	28	7	52
Link Distance (ft)	370	523	160
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW	SW
Directions Served	L	T	TR	L	T	TR	LTR	L	TR
Maximum Queue (ft)	70	53	31	31	50	27	74	119	104
Average Queue (ft)	26	4	7	7	2	4	38	48	45
95th Queue (ft)	58	23	28	27	16	18	61	92	76
Link Distance (ft)		869	869		1628	1628	381		1145
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	155			150				250	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 8

Intersection: 1: Freedom Parkway & Sanborn Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	70	118	118	158	158	184	109	158	228	136	91	114
Average Queue (ft)	39	57	68	91	88	100	52	71	123	62	58	48
95th Queue (ft)	70	103	109	149	147	166	95	132	217	109	91	89
Link Distance (ft)		3082	3082		797	797		1022	1022		1619	1619
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220			250			230			225		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Buckhorn Drive & Sanborn Road

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	54	31	50	21	22	77	55
Average Queue (ft)	27	1	13	1	1	39	28
95th Queue (ft)	51	10	38	7	7	70	50
Link Distance (ft)		797		1013	1013	715	1775
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	185		175				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Buckhorn Drive & Project Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	9
95th Queue (ft)	32
Link Distance (ft)	100
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Falcon Drive & Buckhorn Drive

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	54
Average Queue (ft)	2	26
95th Queue (ft)	14	47
Link Distance (ft)	369	158
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Cougar Drive & Freedom Parkway

Movement	SE	SE	SE	NW	NW	NW	NE	SW	SW
Directions Served	L	T	TR	L	T	TR	LTR	L	TR
Maximum Queue (ft)	52	28	54	52	31	30	55	53	56
Average Queue (ft)	14	1	5	13	3	2	26	21	35
95th Queue (ft)	44	9	25	42	16	13	48	49	54
Link Distance (ft)		869	869		1628	1628	381		1145
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	155			150				250	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 0

Appendix I: Signal Warrants

Warrant 3: Peak Hour (Urban)

Existing Traffic Conditions

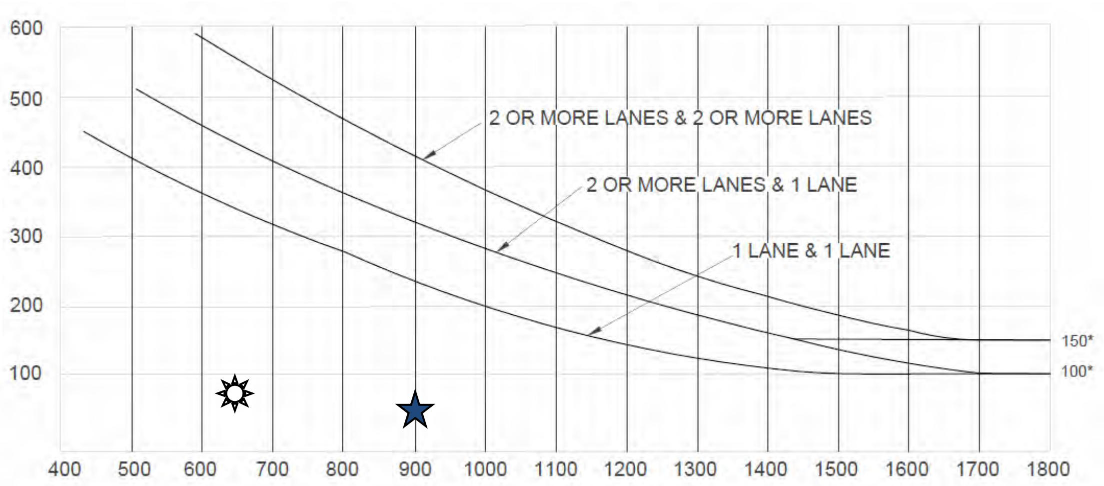
2. Buckhorn Drive / Sanborn Road

AM (PM) Peak Hour

Buckhorn Drive

Highest Approach Volume =

73 (48) VPH



Sanborn Road Total of Both Approaches =

639 (900) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

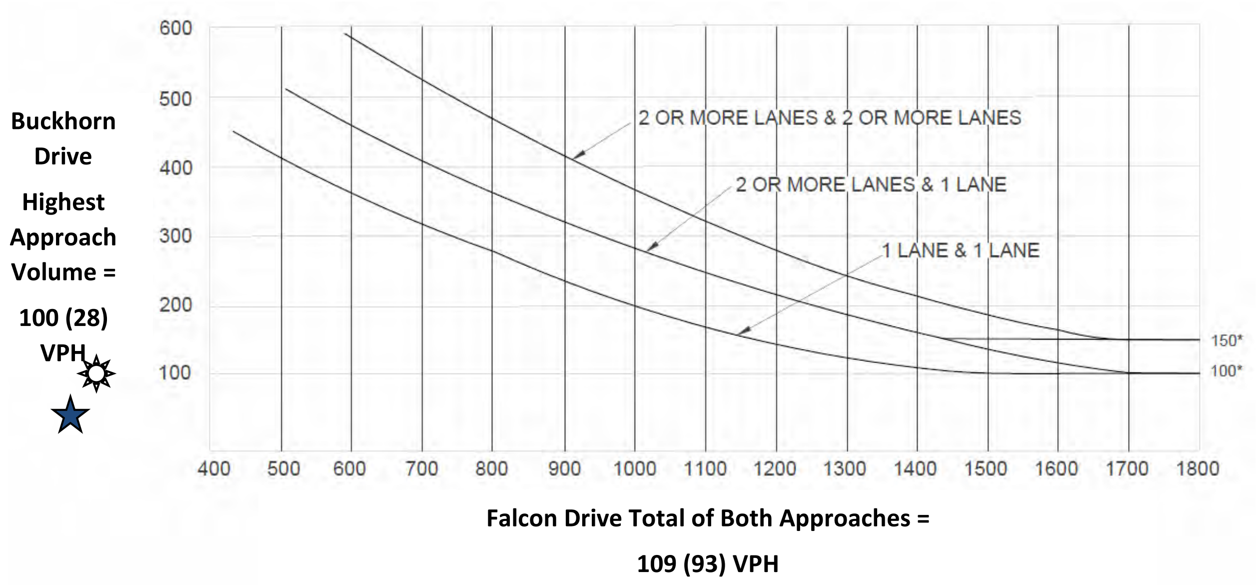
Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Existing Traffic Conditions

4. Buckhorn Drive / Falcon Drive

AM (PM) Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

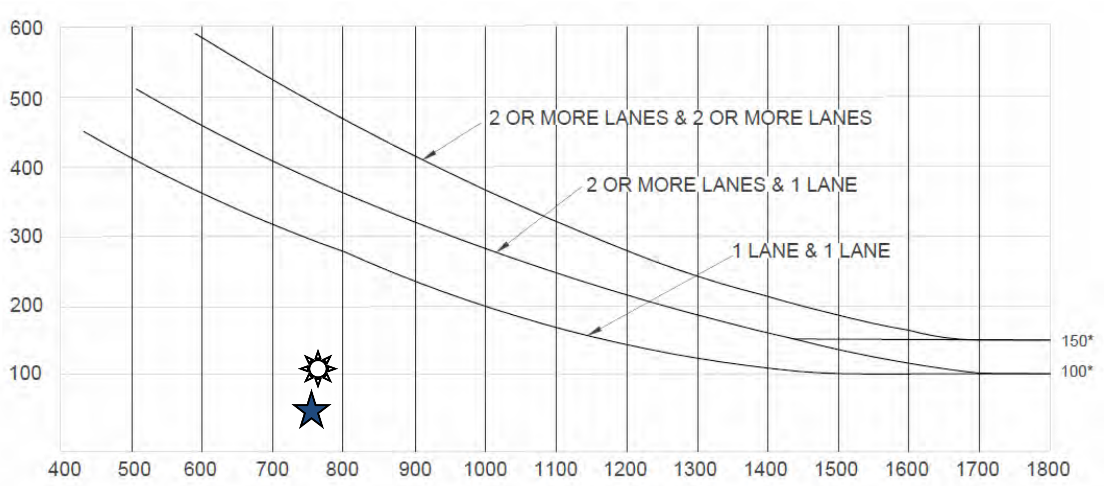
Warrant 3: Peak Hour (Urban)

Existing Traffic Conditions
5. Freedom Parkway / Cougar Drive
AM (PM) Peak Hour

Cougar Drive

Highest Approach Volume =

109 (49) VPH



Freedom Parkway Total of Both Approaches =

771 (754) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

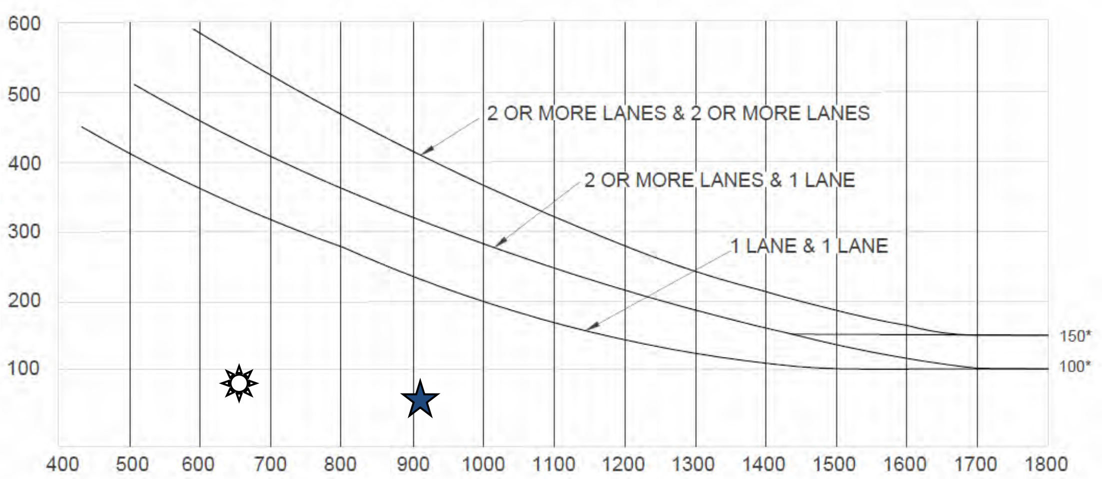
★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions
2. Buckhorn Drive / Sanborn Road
AM (PM) Peak Hour

Buckhorn Drive
Highest Approach Volume =
88 (59) VPH



Sanborn Road Total of Both Approaches =
657 (908) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**
★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

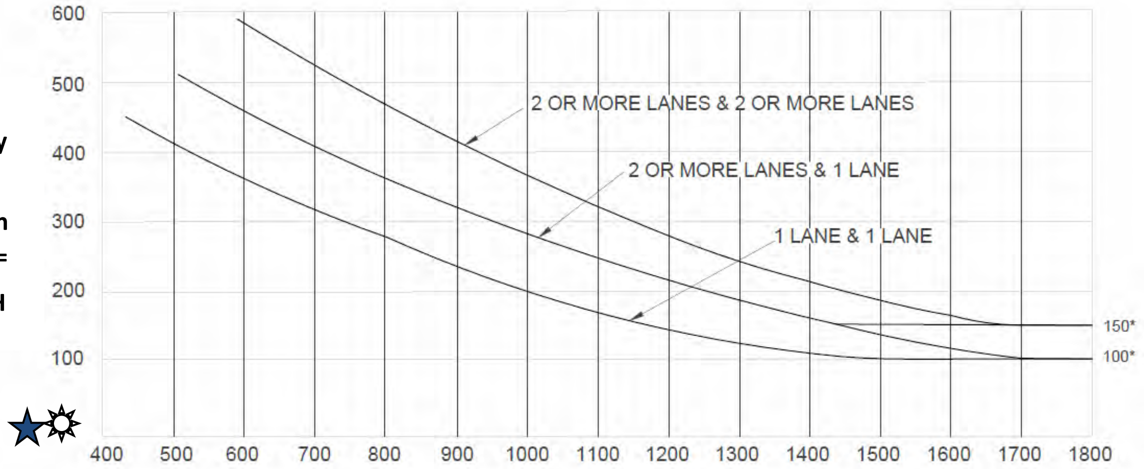
Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions
3. Buckhorn Drive / Project Driveway
AM (PM) Peak Hour

Project Driveway

Highest Approach Volume =

8 (5) VPH



Buckhorn Drive Total of Both Approaches =

215 (101) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions

4. Buckhorn Drive / Falcon Drive

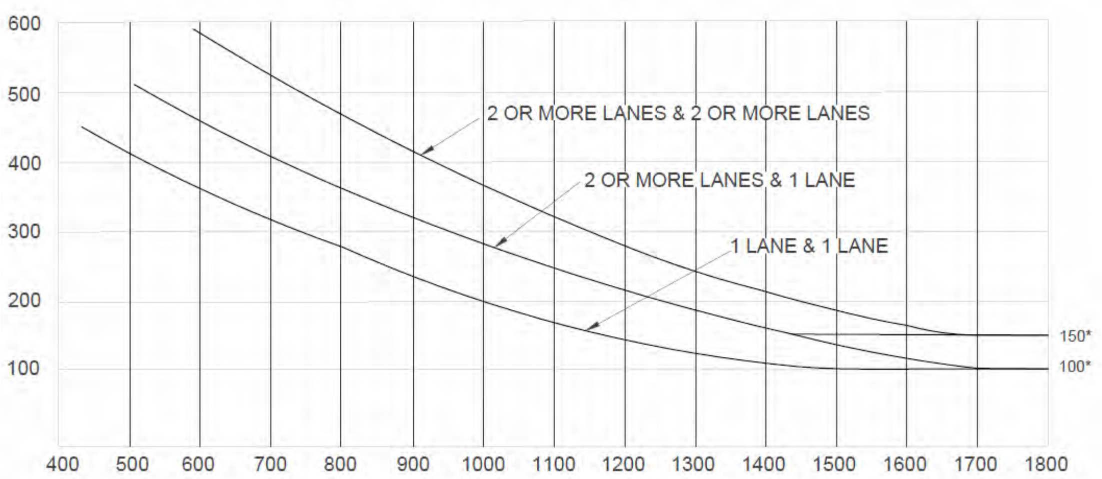
AM (PM) Peak Hour

Buckhorn Drive

Highest Approach Volume =

122 (37) VPH ☼

★



Falcon Drive Total of Both Approaches =

128 (102) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

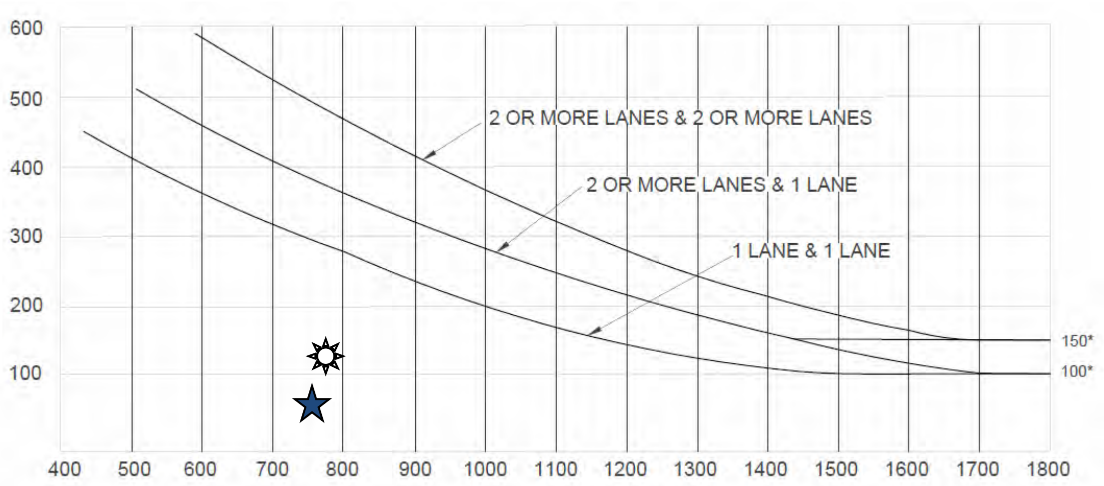
Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions
5. Freedom Parkway / Cougar Drive
AM (PM) Peak Hour

Cougar Drive

Highest Approach Volume =

116 (52) VPH



Freedom Parkway Total of Both Approaches =

778 (757) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

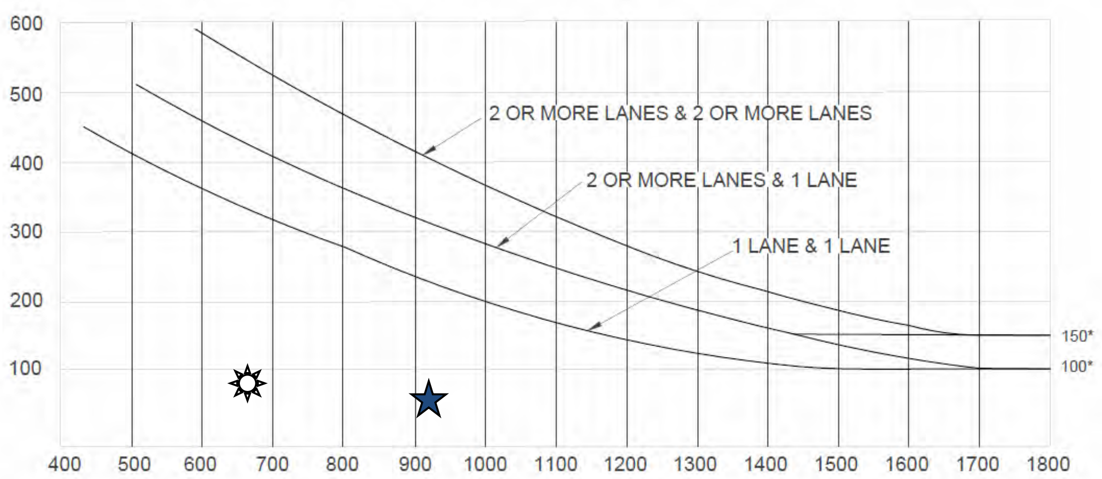
2. Buckhorn Drive / Sanborn Road

AM (PM) Peak Hour

Buckhorn Drive

Highest Approach Volume =

88 (59) VPH



Sanborn Road Total of Both Approaches =

662 (913) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

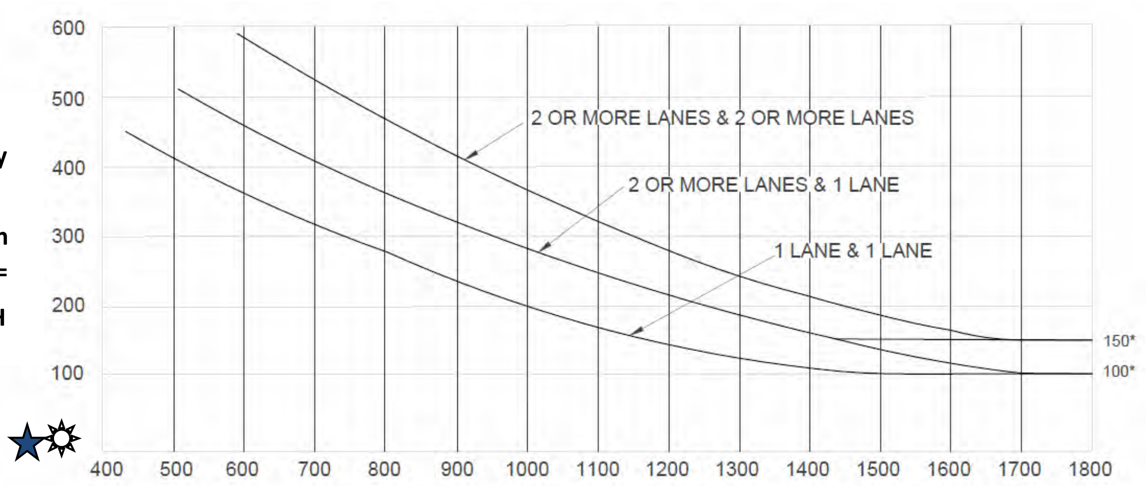
Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions
3. Buckhorn Drive / Project Driveway
AM (PM) Peak Hour

Project Driveway

Highest Approach Volume =

8 (5) VPH



Buckhorn Drive Total of Both Approaches =

215 (101) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

4. Buckhorn Drive / Falcon Drive

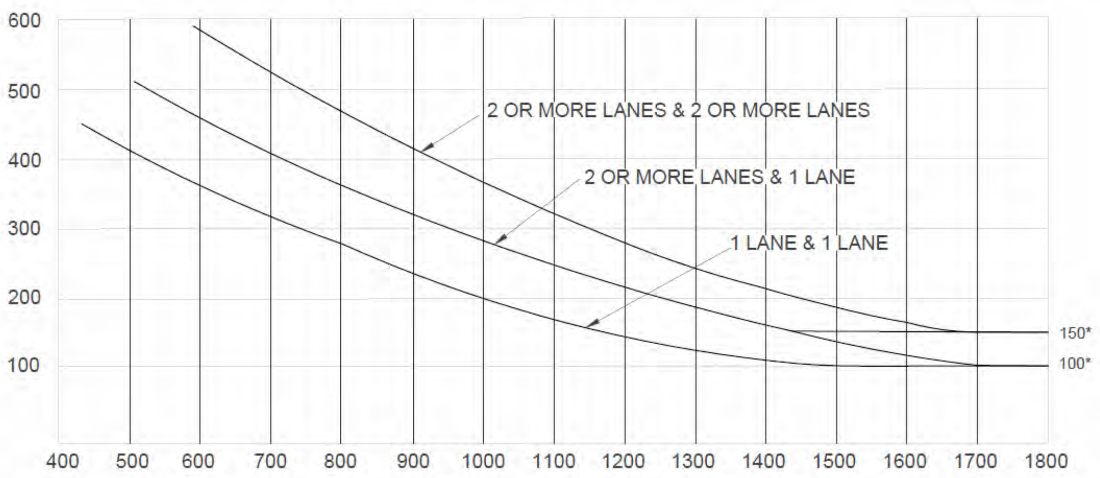
AM (PM) Peak Hour

Buckhorn Drive

Highest Approach Volume =

122 (37) VPH ☼

★



Falcon Drive Total of Both Approaches =

128 (102) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

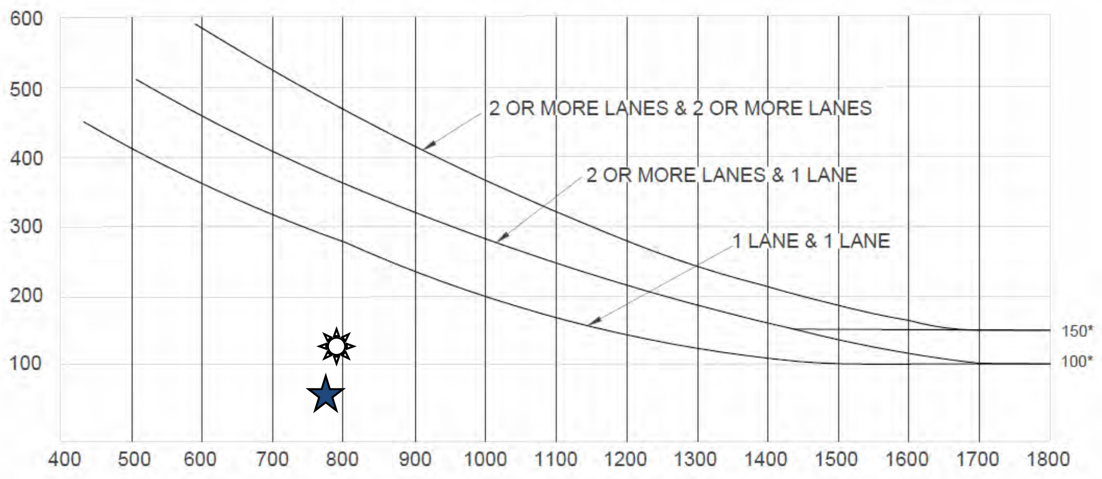
Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions
5. Freedom Parkway / Cougar Drive
AM (PM) Peak Hour

Cougar Drive

Highest Approach Volume =

116 (52) VPH



Freedom Parkway Total of Both Approaches =

796 (779) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 No Project Traffic Conditions

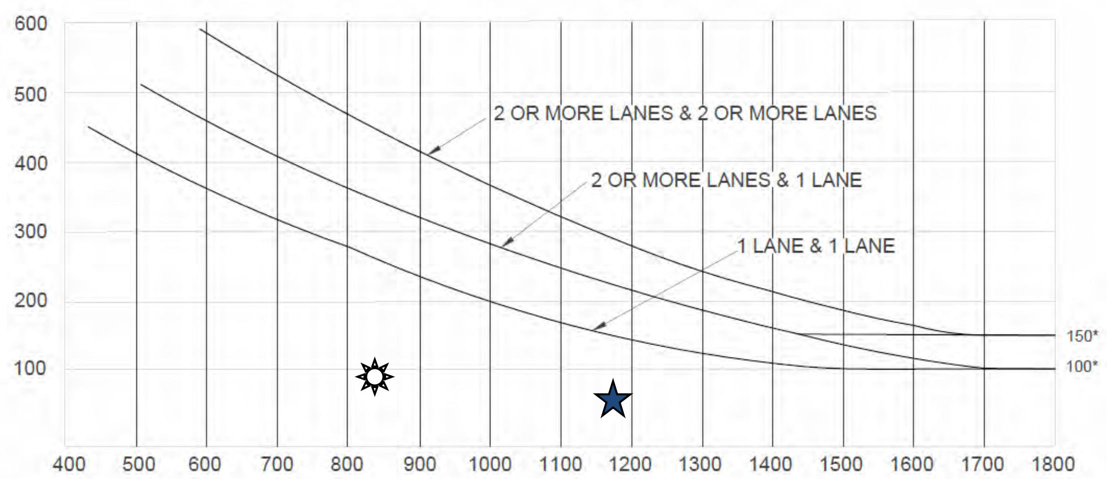
2. Buckhorn Drive / Sanborn Road

AM (PM) Peak Hour

Buckhorn Drive

Highest Approach Volume =

96 (57) VPH



Sanborn Road Total of Both Approaches =

832 (1188) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

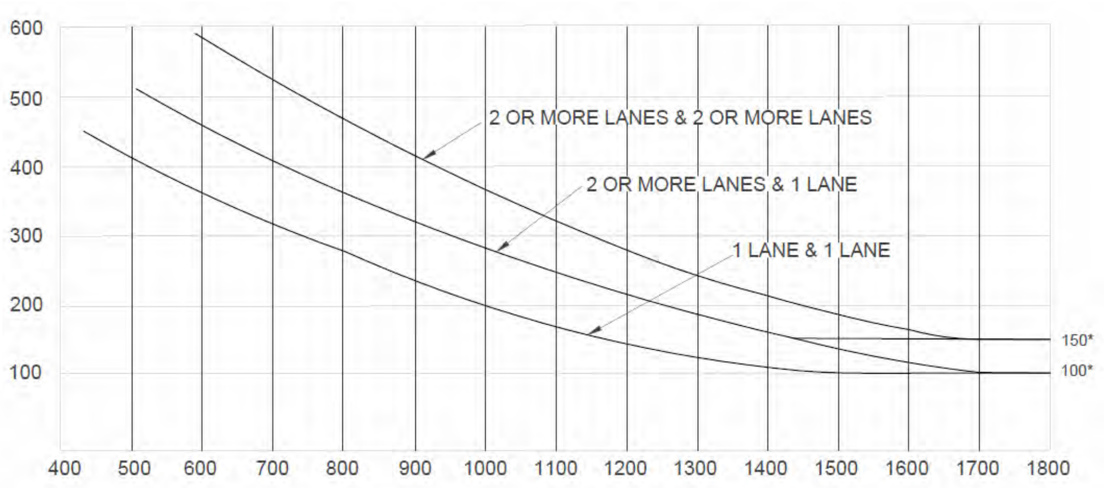
Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 No Project Traffic Conditions

4. Buckhorn Drive / Falcon Drive

AM (PM) Peak Hour

Buckhorn Drive
Highest Approach Volume =
111 (29)
VPH ☼
★



Falcon Drive Total of Both Approaches =

128 (115) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 No Project Traffic Conditions

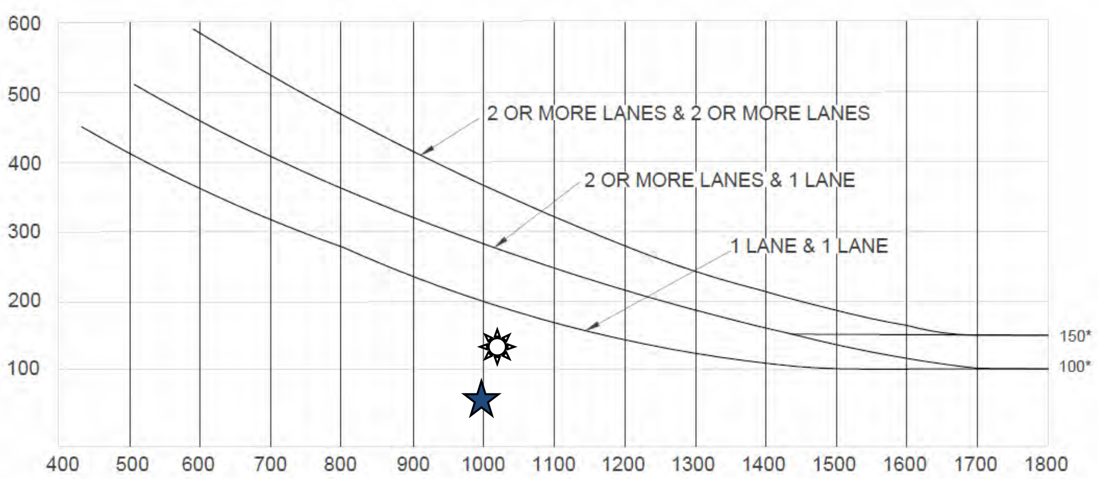
5. Freedom Parkway / Cougar Drive

AM (PM) Peak Hour

Cougar Drive

Highest Approach Volume =

138 (62) VPH



Freedom Parkway Total of Both Approaches =

1017 (999) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions

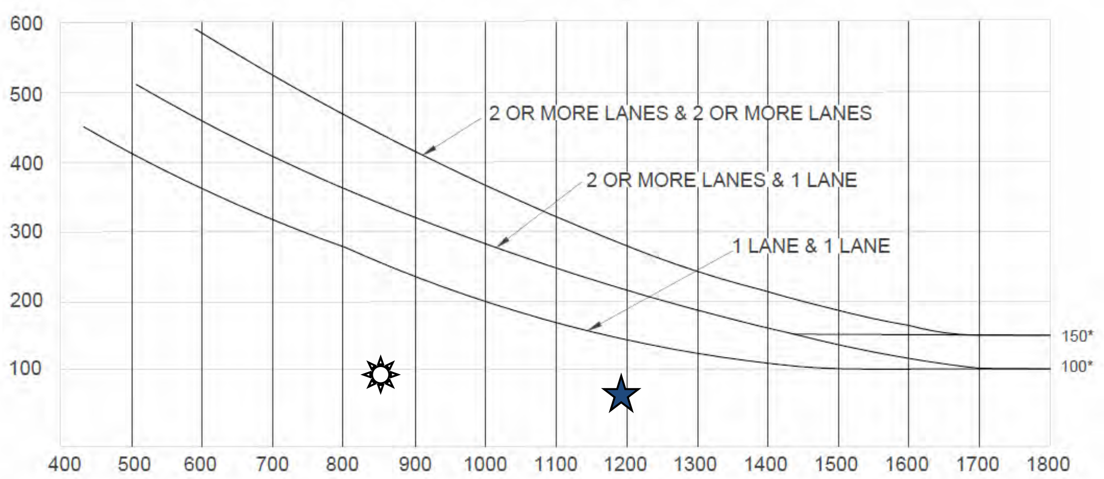
2. Buckhorn Drive / Sanborn Road

AM (PM) Peak Hour

Buckhorn Drive

Highest Approach Volume =

97 (68) VPH



Sanborn Road Total of Both Approaches =

850 (1196) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

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November 7, 2014

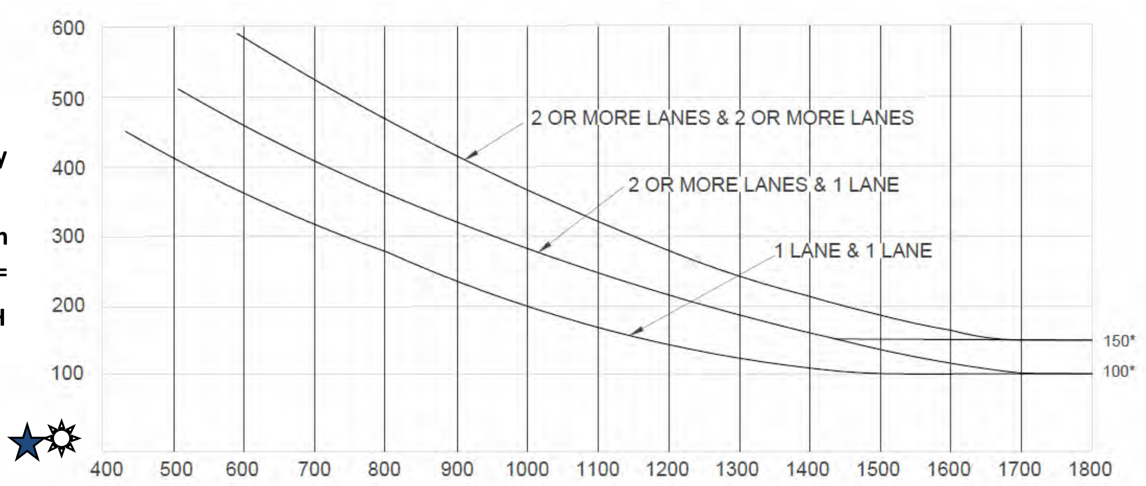
Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions
3. Buckhorn Drive / Project Driveway
AM (PM) Peak Hour

Project Driveway

Highest Approach Volume =

8 (5) VPH



Buckhorn Drive Total of Both Approaches =

248 (117) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

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November 7, 2014

Warrant 3: Peak Hour (Urban)

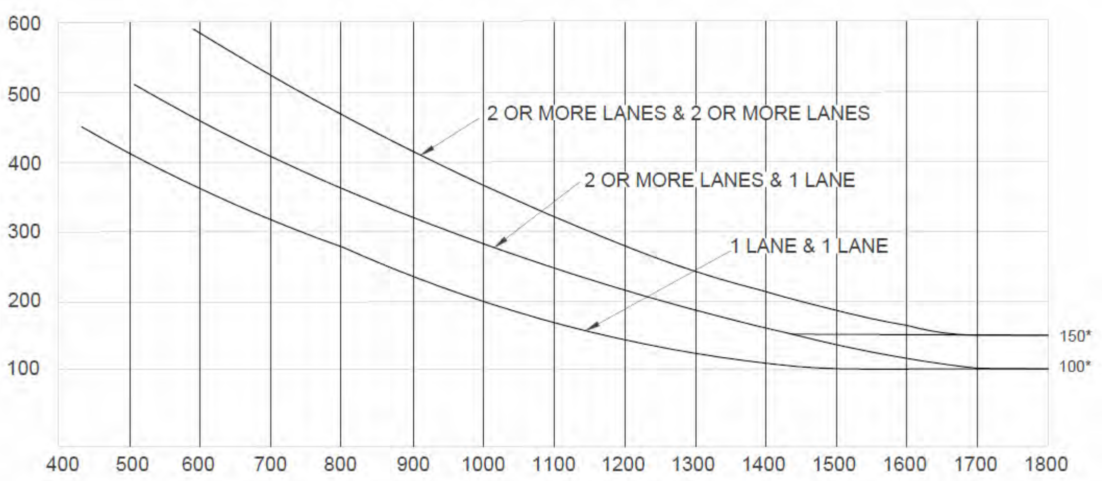
Cumulative Year 2040 plus Project Traffic Conditions
4. Buckhorn Drive / Falcon Drive
AM (PM) Peak Hour

Buckhorn Drive

Highest Approach Volume =

133 (39) VPH ☼

★



Falcon Drive Total of Both Approaches =

147 (124) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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November 7, 2014

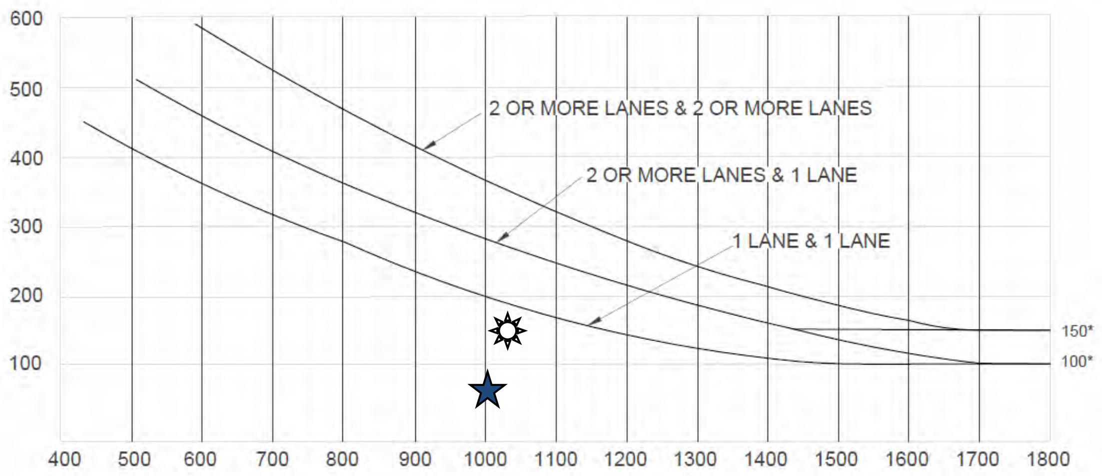
Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions

5. Freedom Parkway / Cougar Drive

AM (PM) Peak Hour

Cougar Drive
Highest Approach Volume =
145 (65) VPH



Freedom Parkway Total of Both Approaches =
1024 (1002) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
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